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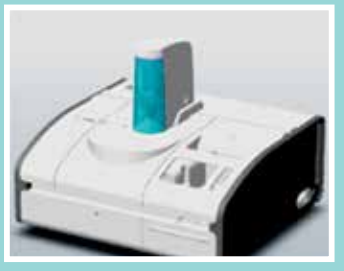

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Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

Dr KK Aggarwal
5th September 1958 - 17th May 2021

HCFI DR KK AGGARWAL RESEARCH FUND

HCFI Round Table Expert Zoom Meeting on "Rabies – A Public Health Concern"

25th September, 2021 (11 am-12 pm)

KEY POINTS OF HCFI EXPERT ROUND TABLE

- Rabies, a vaccine preventable viral disease, is a major public health problem.
- Except Antarctica, rabies is present on all continents; 95% of deaths occur in Asia and Africa.
- It is one of the neglected tropical diseases that affect the poor population in rural areas.
- The global cost of rabies is around US$ 8.6 billion per year.
- The World Health Organization (WHO) is leading the "United against Rabies" drive towards zero human deaths from dog-mediated rabies by 2030. India is a partner to this.
- The theme of World Rabies Day (28th September) this year is "Rabies Facts not Fear".
- Dogs account for 99% of rabies transmission. Most stray dogs in India are not vaccinated or sterilized. India has 35 to 40 million dogs.
- Rabies is endemic in India; 36% of the global rabies deaths occur in India.
- Rabies causes 18,000 to 20,000 deaths every year in India; 30 to 60% of cases are in children younger than 15 years.
- Lack of awareness claims more than 55,000 lives every year in Asia and Africa.
- Rabies is not a notifiable disease in India.
- Virus transmission occurs via saliva of the infected animal. Once symptoms occur, it is fatal.
- Deaths can be 100% prevented by prompt medical care. Vaccinating dogs can prevent deaths.
- Immediate and thorough washing of wounds with soap and water/detergent/povidone-iodine for 15 minutes can help save lives.
- The incubation period of rabies is 2 to 3 months, but can vary from 1 week to 1 year depending on the viral load and the location of the virus entry.
- Initial symptoms are fever with pain and unusual tingling, pricking at the wound site. As it spreads to the brain, fatal inflammation of the brain and spinal cord develops.
- There are two forms of rabies: Furious and paralytic.

- Furious rabies results in hyperactivity, hydrophobia, sometimes aerophobia. Death occurs after few days due to cardiorespiratory arrest.
- Paralytic rabies constitutes 20% of cases and is less dramatic than furious rabies. Muscles become paralyzed, starting from the site of the bite/scratch leading to coma and ultimately death.
- India has a rabies control program, which was started in 2013.
- Goa is the first rabies-free state in India. In 2020, Goa vaccinated 82,012 dogs against rabies across the state, educated 2,13,735 children in 1,461 schools on dog behavior and dog bite first aid, reached 10,265 teachers with key messages in rabies prevention, empowered 17,379 people through 333 community workshops and responded to 4,101 calls via rabies emergency hotline.
- Diagnosis is postmortem or clinical.
- Prevention is by mass vaccination and sterilization of dogs, education on dog behavior and bite prevention, vaccine for post-exposure prophylaxis (PEP) or pre-exposure prophylaxis (PrEP).
- PrEP is indicated for people in high-risk occupations (such as lab workers, handling liver rabies virus), outdoor travelers and expatriates living in remote areas with high exposure risk.
- Bites are divided into three categories.
  - Touching: Animal licks the skin – only washing of the area
  - Nibbling of skin: Minor scratching – wound washing and vaccination
  - Single or multiple bites: Contamination of mucous membrane with saliva from animal licks – wound washing, immediate vaccination and administration of rabies immunoglobulin (RIG).
- Category 2 and 3 carry a risk of developing rabies and require PEP.
- The risk is further enhanced if the biting animal is a known vector species, exposure occurs in a geographical area where rabies is still present, animal looks sick, wound is contaminated with the saliva of the biting animal, unprovoked bite and unvaccinated animal.
- WHO is now recommending intradermal (ID) route for PEP.
- Bites by bats or rodents do not necessitate rabies vaccination. But in cases of big rats or wild rats, PEP has to be given.
- Principles of treatment are wound management, passive immunization (RIG), active immunization (antirabies vaccine [ARV]).
- If RIG is not available on the first visit, its use can be delayed by 7 days from the date of the first vaccine dose.
- Pregnancy and infancy are not contraindications for PEP.
- If patient comes months after being bitten, he should be considered as a fresh case.
- PEP is not required in situations such as consumption of milk of rabid animal. Cooking of meat kills rabies virus.
- Immunization schedule is one dose each of ARV IM on Day 0, 3, 7, 14 and 28 days. Infiltrate antirabies Ig locally on Day 0.
- ID route (updated Thai Red Cross Regimen): 2-site schedule is 2-2-2-0-2; no dose on 14th day. Two injections (0.1 mL each dose) per visit × 4 visits in total - Days 0, 3, 7 and 28.
- Animal bite victims on chloroquine should be given ARV by IM route.
- IM regimen if bite is by cat or dog and if animal is healthy till 10 days after bite. PEP can be discontinued after 10 days by skipping dose on Day 6 to 14, but giving on Day 28.
- With ID regimen, complete course of the vaccination should be given regardless of the animal's status.
- All patients should be kept under observation for at least 15 to 20 minutes after ARV or equine rabies immunoglobulin (ERIG).
- In immunocompromised patients, management is thorough washing of wound, local infiltration of RIG in both category 1 and 2 exposures, complete course of ARV by IM route.
- Rabies monoclonal antibodies PEP is under research; phase I and II trials by WHO.
- For people at risk of exposure: PrEP with 3 doses of the vaccine at 0, 7 and 28 days. A booster dose can be given for people at continued risk. If levels fall below 0.5 IU/mL, booster should be given.
- In cases of re-exposure: proper wound toileting to be done; doses only on Day 0 and 3, either IM or ID injection at one site; no RIG needed. If previous vaccination was partial, then the complete course of the vaccine should be given.

- There is lack of awareness regarding rabies and its treatment. Additionally, the infrastructure and supplies are inadequate. There are vaccines and immunoglobulins for rabies but many times, they are not readily available.
- Stray dogs attack the domestic dog and also the owners.
- There is also the issue of animal activists.
- Engagement of multiple sectors and community education, awareness programs and vaccination campaigns are critical.

Participants: Dr AK Agarwal, Dr Mahesh Verma, Dr Arun Jamkar, Dr Ashok Gupta, Dr Anita Chakravarti, Dr DR Rai, Dr KK Kalra, Mrs Upasana Arora, Ms Ira Gupta, Mr Saurabh Aggarwal, Dr S Sharma

■■■■

People Consuming More Dairy Fat have Lower Risk of Cardiovascular Disease: Study

According to a study published in *PLOS Medicine*, people who consume more dairy fat appear to have a lower risk of cardiovascular disease (CVD), compared to those with lower intake of dairy fat.

Researchers evaluated the dairy fat consumption of 4,150 individuals aged 60 years in Sweden, one of the world's highest dairy producers and consumers. They measured the blood levels of a particular fatty acid found in dairy foods. The study cohort was followed for an average of 16 years. After adjustment for other known CVD risk factors, such as age, income, dietary habits, lifestyle and other diseases, people with high levels of the fatty acid, suggesting a high intake of dairy fats, were found to have the lowest risk of CVD, besides no increased risk of death from all causes. The researchers confirmed these results in other populations after combining the findings from Sweden with 17 other studies including nearly 43,000 individuals from the US, Denmark and the UK… (*Source: CNN*)

Adverse Childhood Experiences Tied to Adult Neurologic Disorders

Adult patients with headaches, epilepsy or other neurologic disorders appear to have increased odds of having had adverse childhood experiences (ACEs) compared to the general public, suggests a new study published online in *Neurology Clinical Practice*.

People with neurologic conditions having a high level of ACEs, including abuse or neglect, also seem to use more healthcare resources, have more comorbidities, and have an increased likelihood of suffering from anxiety and depression, in comparison to those with less ACEs. The study included 198 adults assessed at an outpatient neurology practice at the Hospital of the University of Pennsylvania from July 2019 through March 2020. A survey with the 10-item ACE questionnaire was completed by the participants. Following adjustment for age, gender and race, it was noted that having a high ACE score had a significant association with increased odds of experiencing three or more hospitalizations (odds ratio [OR], 5.2) or any hospitalization (OR, 2.8), compared to having less than four ACEs… (*Source: Medscape*)

US Authorizes Pfizer COVID-19 Booster for Those Above 65, at High-risk

The United States has authorized the use of Pfizer COVID-19 vaccine boosters among individuals over 65 years of age and adults who have a high risk of severe disease and people in high-exposure occupations.

A significant proportion of the population will now be eligible for a third vaccine dose 6 months after receiving the second jab. The authorization has come after an independent expert panel voted recommending the move last week. The panel had dismissed an initial plan to approve Pfizer boosters for all individuals aged 16 and above, stating that the benefit-risk profile was different for younger people, particularly the young males who are more prone to myocarditis.

The CDC may also recommend further specifications about the recipients of the Pfizer booster jabs. The agency may also have to define the workplaces and other settings which may result in frequent exposure to the SARS-CoV-2 virus… (*Source: NDTV – AFP*)

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Understanding Evolution of Resistant Strains in Recent Decades and Approach Towards Antibiotic Therapy

NEETHU POULOSE*, ANIL ANTONY*, SREELAKSHMI SREEDHAR*, ANIL BABU†

ABSTRACT

Developing resistance to antibiotics is a natural process, and a rising threat to human society. These emergent strains have worsened the burden on existing regimen of antibiotic therapy. Resistance, classified under multidrug resistance (MDR), extensively drug-resistance (XDR) and pandrug-resistance (PDR), is widely seen in hospital setup. Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *S. aureus* (VRSA), *Escherichia coli* and Klebsiella (Resistant to third-generation cephalosporins), carbapenem-resistant Enterobacteriaceae (CRE) are currently spread infectious agents which call for careful and proper antibiotic management. Antibiotic control programs, better hygiene, antibiogram-based empirical therapy with improved antimicrobial activity are needed to limit bacterial resistance.

Keywords: Antibiotics resistance, mechanisms, biofilm resistance, multidrug resistance, extensively drug-resistance, pandrug-resistance

Discovery of antibiotic was a milestone in the history of medical science, which revolutionized clinical world. The antibiotics are wonder drugs which have immense role in health sector by reducing morbidity as well as mortality. They are the main weapons against infectious diseases which is a serious issue on a global level, and save countless lives. The antibiotic era started in the 1940s, which changed the profile of infectious diseases and human demography. With due course of time, there evolved a large variety of pathogens and discovery of new antibiotics became necessary. However, as antibiotics served as magical bullets, equally infectious agents challenged by rapid appearance of resistance through unbelievable molecular mechanisms emerged. Over a period of 65 years, newer antibiotics were introduced in the market, which was followed by emergence of resistant strains. Due to increased concern of change in resistance, this is an attempt to point out how far our chemotherapy with antibiotics has reached, emerging resistant strains, mechanisms, multidrug resistance (MDR), extensively drug-resistance (XDR) and pandrug-resistance (PDR) and how intense use of reserve antibiotics will affect in future.

EVOLUTIONARY CHANGE OF ORGANISMS AFTER ANTIBIOTIC DISCOVERY

The extensive use and misuse of antibiotics are the major factors driving the high numbers of resistant pathogenic bacteria worldwide, which is a rising threat to the society. The introduction of new antibiotics to counter those pathogens has frequently been closely followed by the emergence of resistant strains. These emergent strains have worsened the burden on existing regimen of antibiotic therapy in both clinical and economical aspects. Some of the examples are *Staphylococcus aureus* isolates resistant to β-lactams due to β-lactamase as well as extensive spectrum β-lactamase and many of these are also resistant to β-lactamase-resistant penicillins. Methicillin-resistant *S. aureus* (MRSA) isolates are one of the most challenging resistant pathogens now-a-days. Evolutionary pattern of resistant strains of *S. aureus* is given in Figure 1. They are usually associated with hospitals and require implementation of appropriate control measures, which usually reduces prevalence

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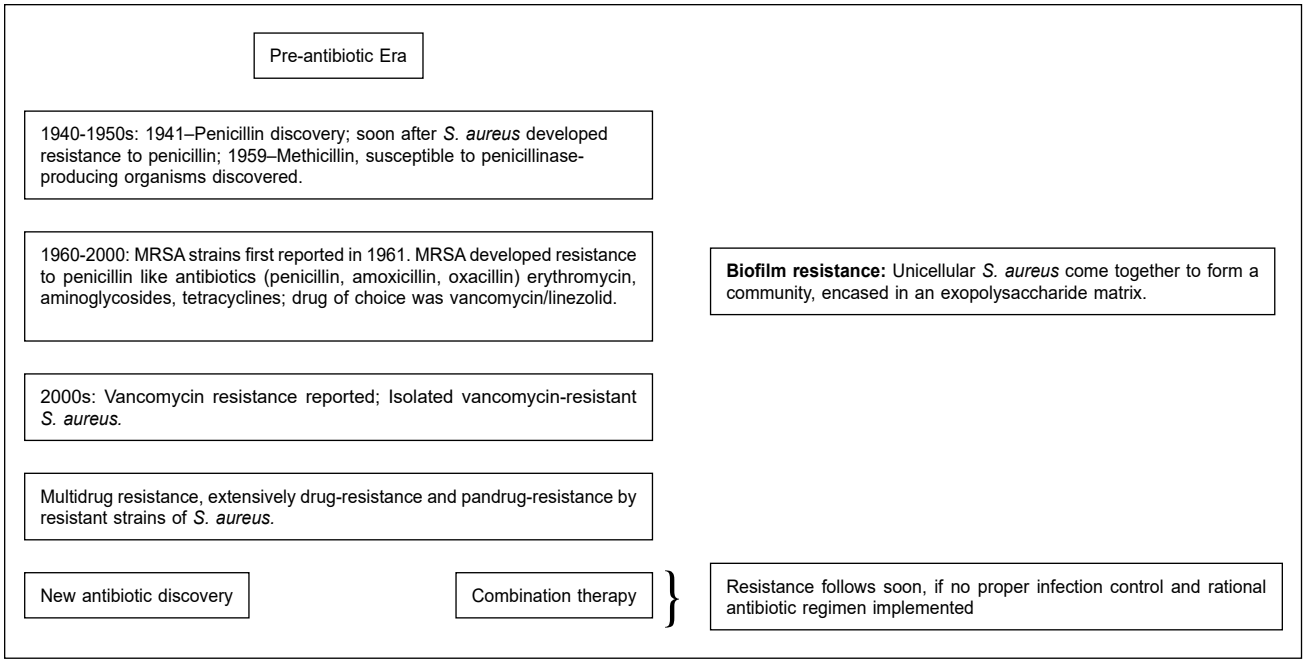

Figure 1. Evolutionary pattern of resistant *S. aureus* strains.

to sporadic levels. Antibiotic resistance often results in failures of empirical therapy. These conditions call for the need for the revolutionary change by either discovery of new antibiotics or combination antibiotic therapy in future. But it is not a rational solution to the problem because resistance follows with these approaches. In short, antibiotic resistance is the major challenge associated with chemotherapy against infectious diseases. Resistant pathogens developed are more virulent, so as a first step, knowledge of etiological agents of infections, antibiotic resistance mechanisms, pattern of developing resistance and sensitivities to available drugs is of immense value for the rational empirical therapy of antibiotics and to slow down the process of antibiotic resistance.

RESISTANT STRAINS IN RECENT DECADES

The susceptible populations of bacteria may become resistant to antimicrobial agents through mutation and selection, or by acquiring from other bacteria, the genetic information that encodes resistance. The infectious agents may get intrinsically resistant to more than one class of antimicrobial agent, or may acquire resistance by *de novo* mutation or via the acquisition of resistance genes from other organisms. These spontaneous mutations may cause resistance by: a) altering the target protein to which the antibacterial agent binds by modifying or eliminating the binding site; b) up-regulating the production of enzymes that inactivate the antimicrobial agent; c) down-regulating or altering an outer membrane protein channel that the drug requires for cell entry; or d) up-regulating pumps that expel the drug from the cell (Table 1).

However, acquisition of new genetic material by antimicrobial-susceptible bacteria from resistant strains may occur by means of conjugation, transformation or transduction, with transposons often facilitating the incorporation of the resistance genes into the host's genome or plasmids. Some of the important or recently developed resistant strains in our community and its mechanisms are discussed below.

E. coli and Klebsiella: Resistance to Third-generation Cephalosporins

Escherichia coli is a common cause of urinary tract infections (UTI) and bacteremia in humans. It has been observed that there is a generalized decrease in bacterial susceptibility of common oral antibiotics to community-acquired UTI, which is frequently resistant to aminopenicillins, such as amoxicillin or ampicillin and narrow-spectrum cephalosporins. Resistance is typically mediated by the acquisition of plasmid-encoded β-lactamases. But the third-generation cephalosporins are broad-spectrum drugs with intrinsic activity against Gram-negative species. Resistance to third-generation cephalosporins and monobactams (aztreonam) occurs through the acquisition of extensive spectrum beta-lactamases (ESBLs). ESBL are strong bacterial enzymes that raise the burden of resistance to even highly

Table 1. Common Resistance Mechanisms and Examples

Common resistance mechanisms	Example	Antibiotics
a) Altering the target protein to which the antibacterial agent binds	Change in penicillin-binding protein 2b in pneumococci, which results in penicillin resistance	Penicillin G, ampicillin, amoxicillin, ticarcillin, piperacillin, methicillin
b) Up-regulating the production of enzymes that inactivate the antimicrobial agent	Erythromycin ribosomal methylase in staphylococci	Penicillins, monobactams, carbapenems and cephalosporins, aminoglycosides (streptomycin, neomycin, netilmicin, tobramycin, gentamicin, amikacin, etc.)
c) Down-regulating or altering an outer membrane protein channel that the drug requires for cell entry	OmpF in *E. coli*	β-lactams, carbapenems, fluoroquinolones, chloramphenicol have specific porins
d) Up-regulating pumps that expel the drug from the cell	Efflux of fluoroquinolones in *S. aureus*	Aminoglycosides, ampicillin, ciprofloxacin, chloramphenicol, clindamycin, cephalosporin, erythromycin, fluoroquinolones, macrolides, nalidixic acid, novobiocin, norfloxacin, streptogramin B, tetracycline, tigecycline, trimethoprim, vancomycin

effective antibiotics. The problem of resistance due to ESBL, even though more reported on Klebsiella, now-a-days has a similar pattern for *E. coli*. Different studies showed that ESBL-producers are also resistant to fluoroquinolone, trimethoprim-sulfamethoxazole and aminoglycoside. However, resistance to cephamycins and other β-lactams may arise as a result of changes in the porins in the outer membrane.

Methicillin-resistant *S. aureus*

Methicillin, the first of the semi-synthetic penicillinase-resistant penicillins, was introduced to target strains of penicillinase-producing *S. aureus*. However, resistance to methicillin was reported very quickly after its introduction in 1960s and detection of MRSA has been associated with more severe clinical presentation of community-acquired pneumonia and it is a leading pathogen in skin infection. It was the beginning of global outbreaks of community-associated MRSA infection. MRSA is a common cause of infection among hospitalized patients. Consequently, treatment of these infections has become more difficult and is a healthcare burden. The studies show that MRSA bacteremia is linked with significantly higher mortality rate compared to methicillin-susceptible *S. aureus* (MSSA) bacteremia. Resistance occurs following the chromosomal acquisition of novel DNA, resulting in the production of a new penicillin-binding protein (PBP2a), with a low-binding affinity for methicillin. PBP2a substitutes for all other penicillin-binding proteins, and because of its low affinity for all β-lactam antibiotics, it confers resistance to all β-lactam agents, including cephalosporins. Vancomycin is currently the gold standard for the treatment of MRSA bacteremia, but over the last decade, there has been increasing concern about the development of MRSA strains with reduced susceptibility to vancomycin.

Vancomycin-resistant *S. aureus*

Another major concern after the emergence of MRSA is the vancomycin-resistant strains (VRSA), that is, evolution of strains resistant to vancomycin, which is the typical treatment for MRSA infection. However, the therapeutic failure of vancomycin therapy is explained by the reduced susceptibility of glycopeptides rather than using the term resistance in clinical world and is associated with minimum inhibitory concentration (MIC). *S. aureus* strains with reduced susceptibility to glycopeptides can be divided into three categories - vancomycin-resistant strains (VRSA; MIC, ≥16 μg/mL); vancomycin-intermediate strains (VISA; MIC, ≥4 μg/mL) and heterogeneous vancomycin-intermediate strains (hVISA; MIC <4 μg/mL). Reduced susceptibility versus resistance of vancomycin is controversial, as the term resistance is reserved for those with MIC ≥16 μg/mL. However, the prevalence of hVISA among MRSA is rising.

The exact mechanism of vancomycin resistance remains unclear, but it probably involves thickening of the organism's cell wall due to the accumulation of cell wall fragments capable of binding vancomycin extracellularly, thereby preventing them from reaching their bacterial target. High-level vancomycin resistance occurs because of expression of vanA, which is

associated with alteration of the vancomycin-binding site in the cell wall. Expression of vanA and other genes made the affinity of vancomycin 1,000 times lower than for the native peptidoglycan precursor and resulted in high resistant density.

E. coli, *S. aureus*, *Streptococcus pyogenes*: Biofilm Resistance

Bacterial biofilm is an emerging mechanism of resistance, as it succeeded in explaining the reason of chronic infectious diseases that ends in treatment failure. Biofilms are communities of microorganisms attached to a surface. Bacterial biofilms are formed when unicellular organisms come together to form a community that is attached to a solid surface and encased in an exopolysaccharide matrix. Example-biofilm development in both commensal and pathogenic *E. coli* - the polysaccharide matrix contributes to the development of phenotypic resistance of pathogenic *E. coli* biofilms and leads to persistent infections. Biofilm bacteria show much greater resistance to antibiotics than their free-living counterparts. Its mechanisms is entirely different from familiar mechanisms of resistance such as familiar plasmids, transposons and mutations. This emerging mechanism has grabbed the attention of clinical world and calls the need for potential antibiotic therapies.

It has been suggested that this matrix prevents the access of antibiotics to the bacterial cells embedded in the community. However, *Staphylococcus epidermidis* biofilms formed allowed for the diffusion of rifampicin and vancomycin. These results suggest that inhibition of diffusion cannot always explain resistance to antimicrobial compounds and other mechanisms must be in place to promote biofilm cell survival. Some organisms in biofilms have been shown to express biofilm-specific antimicrobial resistance genes that are not required for biofilm formation. The 38% of the *E. coli* genome is affected by biofilm formation (ompR gene, csgD gene involved in bacterial adhesion). However, the exopolysaccharide matrix does act as an initial barrier that can delay penetration of the antimicrobial agent. Phenotypic and genotypic characteristics associated with biofilm formation of *E. coli*, *S. aureus*, *Streptococcus pyogenes* have been widely studied. Pharyngitis treatment failure has been seen in patients with isolates of *S. pyogenes* having a biofilm-positive phenotype and increased minimum biofilm eradication concentration (MBEC) for all contemporary antibiotics that are used to treat acute pharyngitis cases. *S. epidermidis* infections on indwelling medical devices point towards biofilm formation. *S. aureus* infections, such as osteomyelitis, specifically cases of juvenile osteomyelitis, periodontitis and peri-implantitis, wound infection, endocarditis, are types of biofilm infection. Device-mediated infections are also common and such devices need to be replaced more frequently than those infected with *S. epidermidis*. Biofilm infections must be either prevented from forming or be surgically removed once formed in order to resolve the infection, together with potential antimicrobial therapy.

Carbapenem-resistant Enterobacteriaceae

The difficult situation has not ended with the emergence of broad-spectrum third-generation cephalosporins, carbapenems (example: *E. coli*-resistant to imipenem). These entered the clinical world with extreme potency and broad-spectrum of activity, but are also showing resistance now-a-days. This may have serious public health consequences, resulting in the elimination of many effective antimicrobial drug treatments against the most common human bacterial pathogens. Many studies support the use of carbapenem as an empirical antibiotic for patients with community-onset bacteremia and those with high risk of resistance. Increased consumption of carbapenems after rise of third-generation cephalosporin-resistant *E. coli* and *Klebsiella pneumoniae* may be the reason for emergence of carbapenem-resistant strains of organisms. Resistance density of carbapenem-resistant *K. pneumonia*e is also increasing along with third-generation cephalosporin-resistant *E. coli* and *K. pneumoniae*.

Carbapenemases are powerful enzymes that inactivate carbapenems. Bacterial acquisition of carbapenemases has a role in the emergence of carbapenem-resistant Enterobacteriaceae (CRE). It also led to resistance to all cephalosporins, aztreonam and β-lactamase inhibitors including clavulanic acid and tazobactam. CRE isolates are increasingly reported as multidrug-resistant, extensively drug-resistant or pandrug-resistant. In a short time, isolates of *E. coli*, Klebsiella, Enterobacter, Serratia, and Salmonella species have reported carbapenem resistance and it globally changed the epidemiology of resistance. Combination regimen or monotherapy of agents such as polymyxins (such as colistin), aminoglycosides, tigecycline and fosfomycin are the available therapeutic options.

Multidrug Resistance, Extensively drug-resistance and Pandrug-resistance

Multidrug resistance, extensively drug-resistance and pandrug-resistance have been defined differently in medical literatures. The standardized international

terminology was created by group of international experts that came together through a joint initiative by the European Centre for Disease Prevention and Control (ECDC) and the Centers for Disease Control and Prevention (CDC) defines these terms as follows: MDR is defined as nonsusceptibility to at least one agent in three or more antimicrobial categories; XDR is defined as nonsusceptibility to at least one agent in all but two or fewer antimicrobial categories (bacterial isolates remain susceptible to only one or two categories). PDR is defined as nonsusceptibility to all agents in all antimicrobial categories (no agents tested as susceptible for that organism). The pictorial representation of relation between MDR, XDR and PDR is shown in Figure 2.

Emerging and spreading of MDR (emerged strains are referred as 'super bugs') is a natural phenomenon, followed by the inappropriate use of antimicrobial drugs, inadequate sanitary conditions, inappropriate food-handling and poor infection prevention and control practices. XDR ('extreme drug resistance', 'extensive drug resistance') was the term created initially to describe drug-resistant *Mycobacterium tuberculosis.* Eventually, the condition changed and the resistance profile of non-Mycobacterium that compromised most standard antimicrobial regimens was also described by same term. Pandrug-resistant (pan-'all') means 'resistant to all antimicrobial agents'. The management of pandrug-resistant Gram-negative bacterial infections is very difficult. Only few drugs, including colistin, in combination with β-lactam antibiotics, polymyxins, an old class of antibiotics, are recommended. Now the time has been reached where there are only limited therapeutic options. Even though many antibiotics are in our hand, it's time to focus on careful handling of antibiotics.

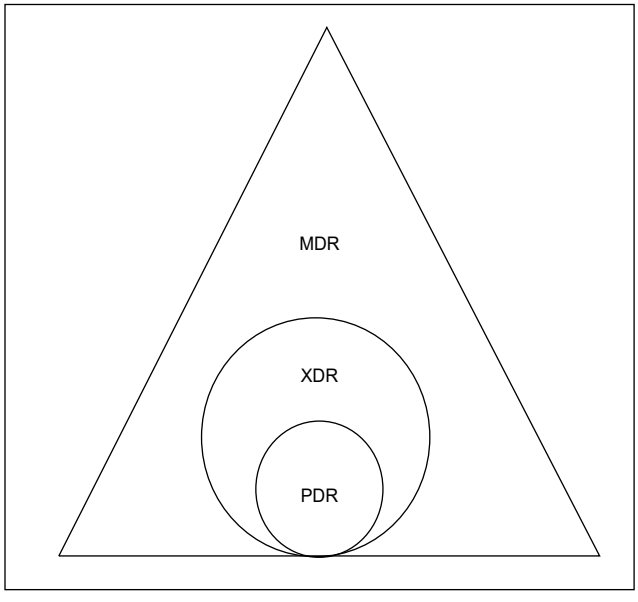

Figure 2. Relation between MDR, XDR and PDR.

MANAGEMENT OF ANTIBIOTIC RESISTANCE

Most of the antibiotic drug resistance is nosocomial or of hospital origin. In India, 1 in 4 patients admitted into hospital acquire nosocomial infection. So, for adequate management of critically ill patients and patients undergoing various operative procedures and other medical interventions, hospital antibiotic policies need to be revisited. In the management of infectious diseases, initially more care should be given in the selection of antibiotics based on hospital antibiogram in empirical therapy. More rational selection of antibiotics based on the most likely pathogens for a given infection and the susceptibility profiles of these pathogens that are specific to each institution will reduce density of resistance in and around institution. Antibiogram considerably helps in proper empirical selection of antibiotics. Each practitioner should have updated knowledge about evolutionary stage of resistant isolates in the hospital, while prescribing each antibiotic. Proper infection control should be employed in hospitals. In short, antibiotic control programs, better hygiene, antibiogram-based empirical therapy and synthesis of agents with improved antimicrobial activity are needed to limit bacterial resistance. In a developing country like India, there is an urgent need to develop and strengthen antimicrobial policy and standard treatment guidelines at the national, community and hospital level.

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WHO Recommends Antibody Treatment for High-risk COVID-19 Patients

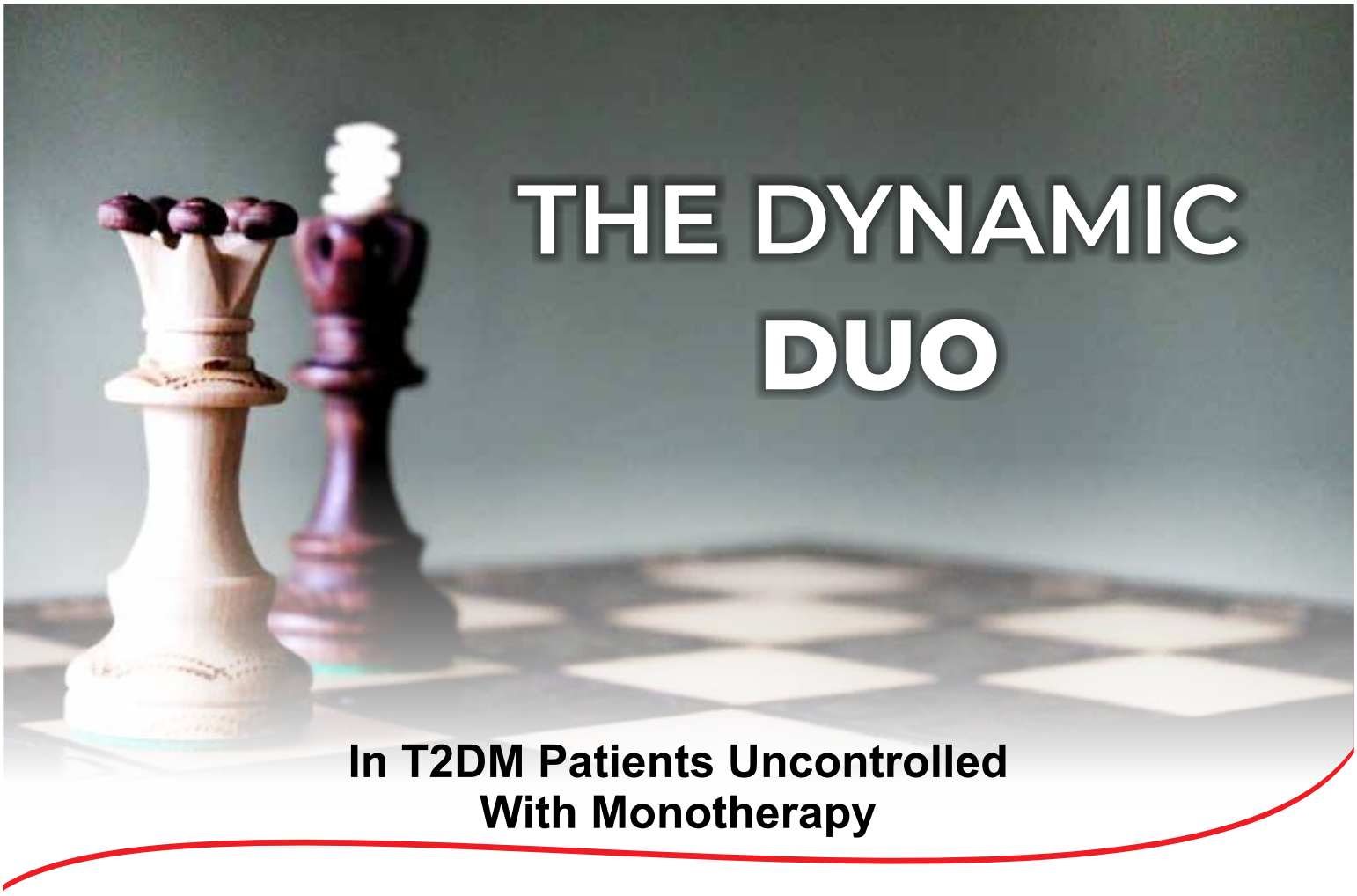
The WHO has recommended the use of Regeneron synthetic antibody treatment for COVID-19 in patients with some specific health profiles. Individuals who have nonsevere COVID-19 and are still at high risk of hospitalization can be given the antibody combination. It can also be administered to severely ill patients who are not able to mount an adequate immune response. The findings are published in the *BMJ*.

Regeneron is a combination of synthetic antibodies casirivimab and imdevimab and has been noted to decrease the risk of hospital admission for unvaccinated individuals, elderly or immunosuppressed patients with COVID-19, as per the findings of three clinical trials yet to be peer reviewed, reported the *BMJ*… (*Source: NDTV – AFP*)

Intensity of Third COVID Wave will Likely be Low: CSIR

The Council of Scientific and Industrial Research (CSIR) has stated that if the third COVID-19 wave emerges, it will likely be low in intensity.

Director-General of CSIR, Dr Shekhar C Mande, said that a large population in the country has been vaccinated with the first dose and even with the second dose, adding that the vaccines prevent the disease considerably. Dr Mande stated that if someone contracts the infection after being vaccinated, the severity is reduced. He mentioned that even if the third wave emerges, its intensity will be much less in comparison with the second wave. Earlier, Manindra Agrawal from IIT-Kanpur had said that the emergence of another wave would be driven by the emergence of a more infectious strain. Dr Renu Swarup, Secretary, Dept. of Biotechnology, Government of India said that the third wave will come if invited. It will depend on human behavior and virus behavior… (*Source: NDTV – ANI*)



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Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

A Prospective Observational Study of Spectrum of Tropical Infections in Pregnancy in a Tertiary Care Hospital in Mumbai, Maharashtra

GAURAV SHARMA*, NEELAM N REDKAR†, PRAKASH RELWANI‡, SAMEER S YADAV#, SHEELA PANDEY‡

ABSTRACT

Background and aims: Pregnancy is associated with several hormonal and mechanical changes in the body. The tropical infections that most commonly affect pregnant females are malaria, dengue, leptospirosis and typhoid. These tropical infections cause many medical complications in pregnancy by causing anemia, thrombocytopenia, bleeding and inflammatory reactions. Therefore, we conducted a study to evaluate the clinical presentation, complications and outcome of tropical infections in pregnancy. **Material and methods:** The present study was conducted at a tertiary care hospital in Mumbai, Maharashtra over a period of 1½ year (January 2018 to June 2019) after getting approval from Institutional Ethics Committee. In this study, 250 pregnant patients admitted in medicine ward, obstetrics and gynecology ward, and ICU with symptoms and signs of tropical infections and age more than 18 years, who gave written informed consent, were included. **Results:** The most common age group amongst the study population was 20 to 24 years (41.6%), followed by 25 to 29 years (40%) and 30 to 35 years (18.4%). Most of the study population had gestational age of 1 to 12 weeks (61.6%), followed by 13 to 28 weeks (31.6%) and more than 28 weeks (6.8%). Most of the study population had parity 2 (46.8%), followed by parity 1 (43.2%), parity 3 (6.8%) and parity 4 (3.2%). The most common clinical features amongst the study population was fever (62%), followed by headache (32.8%), nausea (30.8%), pain in abdomen (26.4%) and petechiae (26%). The most common infections amongst the study population were malaria (11.2%), dengue (8%), leptospirosis (6%) and enteric fever (5.2%). The most common medical complications were bleeding due to thrombocytopenia (TCP) (6.8%), followed by serositis (5.2%), ARDS (4.4%), meningitis (2.8%), subconjunctival hemorrhage (2.8%) and encephalitis (1.4%). Complicated infections were seen in 30% of the study population. **Conclusion:** All pregnant women must be evaluated at primary care centers properly in their antenatal visits for their parity status and any associated risk factors and diseases. By doing this, we can reduce many tropical infections, complications and maternal mortality in early stage of pregnancy.

Keywords: Pregnancy, tropical infections, malaria, dengue, leptospirosis, thrombocytopenia

Pregnancy is associated with several hormonal and mechanical changes in the body.[1,2] The tropical infections that most commonly affect pregnant females are malaria, dengue, leptospirosis and typhoid. These tropical infections cause many medical complications in pregnancy by causing anemia, thrombocytopenia, bleeding and inflammatory reactions. In places where malaria transmission is high, pregnant women may present with only a few symptoms or are asymptomatic during infection, thus making diagnosis a challenge. Primigravida have a high risk of infection and adverse pregnancy outcomes as they do not have immunity to the pregnancy-specific variants of *Plasmodium falciparum* that accumulate in the placental intervillous space, causing placental malaria and occult placental malaria. The parasitized red blood cells infiltrating the placenta have been shown to be functionally and antigenically different from those seen in nonpregnant individuals. Placental parasite isolates express variable surface antigens on the parasitized red blood cell surface, thus conferring a distinctive adhesive phenotype which enables them to sequester in the placenta. Nearly all nonplacental isolates of *P. falciparum* bind to CD36; however, placental isolates bind to glycosaminoglycans such as chondroitin sulfate A expressed on placental syncytiotrophoblast, and do

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not bind to CD36.[3,4] Immunity to placental malaria is acquired during later pregnancies as women develop antibodies to prevent *P. falciparum* sequestration and enhance opsonic clearance of the parasitized cells.[3-5] Immunocompromised women, such as those with human immunodeficiency virus (HIV), do not develop the protective immunity and hence women of all gravidae can develop malaria. *Plasmodium vivax* does not accumulate in the placenta to the same extent as *P. falciparum*. However, studies suggest that it can adhere to placental glycosaminoglycans and does cause maternal anemia and fever, which contribute to both preterm delivery and fetal growth restriction.[6,7]

Pregnant patients of dengue usually have a typical presentation of fever with headache, retro-orbital pain, muscle ache and thrombocytopenia. Case reports have also reported epigastric pain, bleeding and petechiae hemorrhage among pregnant women with dengue fever.[8,9] Leptospirosis in pregnant patients may present with fever, thrombocytopenia, nausea, vomiting and abdominal pain.[10]

MATERIAL AND METHODS

The present study was conducted at a tertiary care hospital in Mumbai, Maharashtra, over a period of 1½ year (January 2018 to June 2019) after getting approval from Institutional Ethics Committee. In this study, 250 pregnant patients admitted in medicine ward, obstetrics and gynecology ward, and ICU, with symptoms and signs of tropical infections and age more than 18 years who gave written informed consent, were included. Those who expired before the presence or absence of infection in them would have been established were excluded.

RESULTS

This prospective observational study was conducted on 250 pregnant women with signs and symptoms of tropical infections.

Table 1 shows that the most common age group amongst the study population was 20 to 24 years (41.6%), followed by 25 to 29 years (40%) and 30 to 35 years (18.4%).

As seen in Table 2, most of the study population had gestational age of 1 to 12 weeks (61.6%), followed by 13 to 28 weeks (31.6%) and more than 28 weeks (6.8%).

Table 3 shows that most of the study population had parity 2 (46.8%), followed by parity 1 (43.2%), parity 3 (6.8%) and parity 4 (3.2%).

Table 1. Age Distribution Amongst Study Population

Age group	Frequency of infection	Percentage (%)
20-24 years	104	41.6
25-29 years	100	40
30-35 years	46	18.4
Total	**250**	**100**

Table 2. Gestational Age Amongst Study Population

Gestational age	Frequency of infection	Percentage (%)
1-12 weeks	154	61.6
13-28 weeks	79	31.6
>28 weeks	17	6.8
Total	**250**	**100**

Table 3. Parity Status Amongst Study Population

Parity	Frequency of infection	Percentage (%)
1	108	43.2
2	117	46.8
3	17	6.8
4	8	3.2
Total	**250**	**100**

As seen in Table 4, the most common clinical feature amongst the study population was fever (62%), followed by headache (32.8%), nausea (30.8%), pain in abdomen (26.4%) and petechiae (26%).

As seen in Table 5, the most common type of infections amongst study population were malaria (11.2%), dengue (8%), leptospirosis (6%) and enteric fever (5.2%).

Table 6 shows that the most common medical complication amongst the study population was bleeding due to thrombocytopenia (TCP; 6.8%), followed by serositis (5.2%), acute respiratory distress syndrome or ARDS (4.4%), meningitis (2.8%) and subconjunctival hemorrhages (2.8%).

As seen in Table 7, complicated infections occurred in 30% of the population, out of which death occurred in 2 cases and no death in patients with uncomplicated infections.

Table 4. Clinical Features Amongst Study Population

Clinical features	Frequency	Percentage (%)
Fever	155	62
Vomiting	45	18
Nausea	77	30.8
Pain in abdomen	66	26.4
Arthralgia	41	16.4
Petechiae	65	26
Headache	82	32.8
Itching/pruritis	55	22
Difficulty in breathing	49	19.6
Abdominal distension	39	15.6
Hematemesis	4	1.6
Malena	15	6
Altered sensorium	7	2.8
Hemoptysis	18	7.2

Table 5. Type of Infections Amongst Study Population

Infections	Frequency	Percentage (%)
Dengue	20	8
Malaria	28	11.2
Leptospirosis	15	6
Enteric fever	13	5.2

Table 6. Medical Complications Amongst Study Population

Medical complications	Frequency	Percentage (%)
Serositis	13	5.2
Bleeding due to TCP	17	6.8
ARDS	11	4.4
MODS	5	2.0
Myocarditis	5	2.0
Meningitis	7	2.8
Encephalitis	3	1.2
Subconjunctival hemorrhages	7	2.8

Table 7. Comparison of Complication and Outcome Amongst Study Population

Complication	Frequency (%)	Survived (%)	Death (%)
Complicated infections	75 (30)	73 (97)	2 (3)
Uncomplicated infections	175 (70)	175 (100)	0 (0)
Total	**250**	**248**	**2**

DISCUSSION

In the present study, the most common age group amongst the study population was 20 to 24 years (41.6%), followed by 25 to 29 years (40%) and 30 to 35 years (18.4%). This finding is in line with a study by Chandrashekar et al which evaluated the incidence and severity of malarial anemia and associated risk factors among pregnant women. Of the 71 infected women, most (38%) were in the age group of 21 to 25 years.[11]

Most of the study population in our study had gestational age of 1 to 12 weeks (61.6%), followed by 13 to 28 weeks (31.6%) and more than 28 weeks (6.8%). Most of the study population had parity 2 (46.8%). The most common clinical features were fever (62%), headache (32.8%), nausea (30.8%), pain in abdomen (26.4%) and petechiae (26%), and most common type of infections were malaria (11.2%), dengue (8%), leptospirosis (6%) and enteric fever (5.2%). The risk of severe malaria among pregnant women is threefold higher than that among nonpregnant women. Moreover, a median maternal mortality of 39% has been noted in studies in Asia-Pacific.[12]

Most common medical complications amongst study population were bleeding due to TCP (6.8%), serositis (5.2%), ARDS (4.4%), meningitis (2.8%), subconjunctival hemorrhages (2.8%) and encephalitis (1.2%). Similarly, in the study conducted by Mousumi, complication like excessive bleeding was reported in about 87% of pregnant women in India in 2007-2008.[13]

CONCLUSION

Fever followed by headache were the most common manifestations of pregnant women with tropical infections. The most common type of infections were malaria, dengue, leptospirosis and enteric fever. The most common medical complications were bleeding due to TCP, followed by serositis, ARDS, meningitis, subconjunctival hemorrhage and encephalitis. Complicated infections were seen in 30%

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of pregnant women in the tertiary care hospital in Mumbai, Maharashtra. Most of the study population had good recovery. Pregnancy is a condition in which immunity of the mother decreases with progression of pregnancy and with increasing maternal age and associated comorbidities. This immune status declines progressively, so the mother becomes more vulnerable to infections and diseases. So, all pregnant women must be evaluated at primary care centers properly in their antenatal visits for their parity status and any associated risk factors and diseases. By doing this, we can reduce many tropical infections, complications and maternal mortality in early stage of pregnancy.

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Erratum

In the article titled "Pyrogenic Cytokines Mediated Pathophysiology of Fever and Role of Mefenamic Acid in Pediatric Practice;" Published in the *Indian Journal of Clinical Practice*. 2021;32(4):229-36; there are 3 errors:

1. In the Fifth sentence of the Abstract "However, of late, there is a trend of increased use of mefenamic acid as antipyretic." The sentence should read "However, of late, there is a trend of increased prescription use of mefenamic acid as an antipyretic."
2. In the Ninth sentence of the Abstract "Its probable action in inflammatory fever and febrile seizure due to its inhibitory action on the NLRP3 inflammasome and potential antiviral actions in viral infections are also highlighted, respectively;" the word respectively is deleted. The sentence should read "Its probable action in inflammatory fever and febrile seizure due to its inhibitory action on the NLRP3 inflammasome and potential antiviral actions in viral infections are also highlighted."
3. In the 7th line under Heading **Mefenamic Acid vs. Other Antipyretics** "There have been some reports of failure of antipyretic drugs such as paracetamol in controlling fever, giving rise to use of mefenamic acid as an antipyretic;" the word 'prescription' is added. The sentence should read "There have been some reports of failure of antipyretic drugs such as paracetamol in controlling fever, giving rise to prescription use of mefenamic acid as an antipyretic."

We regret the error.

Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

I-Gel versus Proseal Laryngeal Mask Airway in Pediatric Airway Management: A Comparative Study

B SAI KARTHEEK*, SULOCHANA DASH†, DIPTIMAYEE MALLIK‡, NUPUR MODA#

ABSTRACT

Aim: To compare the insertion characteristics of supraglottic airway devices I-Gel and Proseal laryngeal mask airway (PLMA) in pediatric airway management during elective surgeries under general anesthesia. **Methodology:** This prospective randomized comparative study was conducted in 60 pediatric patients divided into two groups of 30 each (Group I and Group P), aged 1 to 5 years and belonging to American Society of Anesthesiologists (ASA) Class 1 and 2 posted for elective surgeries under general anesthesia. In Group I, I-Gel was used and in Group P, PLMA was used. The primary outcome of the study was to assess proper placement of airway devices with adequate oropharyngeal sealing and the secondary outcomes were time taken for insertion, ease of insertion, number of attempts, hemodynamic changes associated with insertion of the device, ease of gastric tube passage and complications. Statistical analysis was done by SPSS version 25. Quantitative variables were analyzed through independent sample *t*-test and categorical variables were analyzed by Chi-square test. P value <0.05 was taken as statistically significant. **Results:** The demographic data, insertion time and number of attempts were comparable in both the groups. Placement of I-Gel was better in comparison with that of PLMA and was statistically significant (p - 0.010). **Conclusion:** I-Gel is a better supraglottic airway device when compared to PLMA in terms of ease of insertion and proper placement and there are no significant hemodynamic changes with insertion of both devices.

Keywords: Supraglottic airways, I-Gel, PLMA, pediatric patient

Maintenance of a patent airway remains as one of the important duties of anesthesiologists. At times, airway management becomes challenging for the anesthesiologist, specifically in pediatric age groups. Though endotracheal intubation is the gold standard technique, it has its disadvantages like reflex sympathetic stimulation and is accompanied with elevated levels of plasma catecholamines, hypertension, tachycardia, myocardial ischemia and depression, ventricular arrhythmias and intracranial hypertension. So, these days a wide variety of supraglottic airway devices (SADs) are being used to protect the airway in both elective and emergency situations, so that endotracheal intubation could be avoided in pediatric patients. Advanced airway devices like Proseal laryngeal mask airway (PLMA) and I-Gel are now considered as alternatives to endotracheal intubation for securing the airway and providing adequate ventilation even in difficult intubation and in emergency situations.[1,2]

Many individual studies have been done to compare the advantages and disadvantages of both these airway devices in adults. But a search through the literature reveals few studies comparing PLMA and I-Gel in routine anesthetic practice for airway management in pediatric patients. In this study, we have made an attempt to compare both these airway devices with respect to the insertion conditions and hemodynamic responses in pediatric patients posted for elective surgery under general anesthesia.

The aim of the present study was to compare the clinical performance of the PLMA (Teleflex Medical Europe Ltd, County Westmeath, Ireland) with I-Gel (Intersurgical, UK) in pediatric patients posted for elective lower abdominal and lower limb surgeries

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under general anesthesia. The primary outcome of the study was to assess proper placement of airway devices with adequate oropharyngeal sealing and the secondary outcomes were time taken for insertion, ease of insertion, number of attempts, hemodynamic changes associated with insertion of the device, ease of gastric tube passage and complications.

MATERIAL AND METHODS

This prospective randomized double-blind comparative study was conducted at the Institute of Medical Sciences and SUM Hospital, Bhubaneswar during the period of July 2019 to June 2020. After obtaining approval of Institutional Ethical Committee, 60 pediatric patients were selected and enrolled for the study. The parents of the patients were explained about the purpose of the study, the procedure, the intended study methods and any adverse outcome associated with it and informed written consent was obtained from them. Patients aged 1 to 5 years of either sex belonging to the American Society of Anesthesiologists (ASA) Class 1 and 2 posted for elective lower abdominal and lower limb surgeries under general anesthesia (GA) were included in the study. Patients who were not willing to participate in the study, belonging to ASA Class ≥3, patients with anticipated difficult airway, those who required surgery in prone position and patients having risk of aspiration were excluded from the study.

Thorough preanesthetic evaluation was done including proper history, general and systemic examinations for categorizing into ASA class and inclusion into the study. Patients were randomly assigned into two groups of 30 each with help of computer-generated randomization table – Group P, for whom PLMA was used, and Group I, for whom I-Gel was used. All children fasted 6 hours preoperatively for solids and 2 hours for clear fluids. The patients were brought into the operation theater and intravenous access was obtained with appropriate size intravenous cannula. Intravenous Ringer's lactate was started. Standard monitors like pulse oximeter, automated noninvasive blood pressure, ECG, precordial stethoscope were connected and baseline values were recorded. All patients were premedicated with injection glycopyrrolate 10 μg/kg IV, injection midazolam 0.02 mg/kg IV, injection fentanyl 2 μg/kg IV, 5 minutes before induction of anesthesia. Preoxygenation was done with 100% oxygen for 3 minutes.

Induction was achieved with injection propofol 2 mg/kg IV. Facemask ventilation was done with 2% sevoflurane and oxygen. After checking for adequacy of mask ventilation, neuromuscular blockade was achieved with IV atracurium 0.5 mg/kg. Patients were allocated just before device insertion to either Group P or Group I based on sequential computer-generated numbers in opaque sealed envelopes.

Anesthesiologist not involved in the study generated the random number table. The Anesthesiologist was blinded to the group allocation. The Anesthesiologist who inserted the airway devices had performed at least 50 PLMA and 50 I-Gel device insertions. An opaque screen was used to separate the head end from the monitor so that the observer will not be able to see, which supraglottic device is being used, to eliminate the bias. After 3 minutes of atracurium injection maintaining the patients head in sniffing position, jaw was opened and appropriate sized (based on the weight of the patient according to manufacturer's recommendation) supraglottic airway device was inserted. The I-Gel was inserted by firmly holding the device such that the cuff outlet was facing the chin of the patient and it was then guided along the hard palate until definitive resistance was felt. The insertion of PLMA was performed using the digital method. The PLMA cuff was inflated with appropriate amount of air as per manufacturer's instructions. Effective ventilation was judged using a square wave capnograph tracing and bilateral chest movements on gentle manual ventilation. In the event of partial or complete airway obstruction or a significant air leak, the device was removed, and reinsertion was attempted till a maximum of three attempts before the device was considered a failure. Endotracheal tube was used in such a situation. The time interval between picking up the device and advancing it beyond the central incisors till it is fully inserted and total resistance has been encountered was recorded as insertion time. The number of insertion attempts to proper placement was recorded. The ease of insertion was graded as: easy – as no resistance to insertion of airway into the pharynx in a single movement, and difficult – as the resistance to insertion of airway requiring adjustment for the correct placement of the device. A lubricated orogastric tube (OGT) was inserted through the drain tube after insertion of SAD. Correct OGT placement was determined by suction of fluid or detection of injected air by listening with a stethoscope over the epigastrium. Proper placement of the device was assessed during manual ventilation, with the adjustable pressure limiting (APL) valve set to limit peak airway pressure to 20 cm H_2O. It was graded as follows: excellent - no audible leak; good - an audible leak with relevant loss of air but sufficient ventilation, as indicated by an end-tidal carbon dioxide ($EtCO_2$) <40 mmHg and poor - clinically relevant loss of air and insufficient ventilation,

requiring repositioning or replacement of the device. The PLMA or I-Gel was then connected to the circle system of anesthesia machine.

Anesthesia was maintained with sevoflurane 2% in a mixture of 50% N_2O and 50% oxygen and intermittent doses of IV nondepolarizing muscle relaxant (atracurium) and fentanyl every 30 minutes. The ease of placement of gastric tube was also recorded as easy or difficult: easy – without any resistance and manipulation; difficult – needs manipulation of the device and gastric tube. Failure of gastric tube placement was also recorded, and it was defined as failure to advance the gastric tube into the stomach within 2 attempts. The patients were monitored for the heart rate, blood pressure (mean arterial pressure [MAP], oxygen saturation [SPO_2] and $EtCO_2$. Hemodynamic changes were recorded immediately postinsertion and at 5, 10, 15 minutes of device insertion. All above parameters were noted then after every 10 minutes till the end of surgery. The data noted in first 15 minutes was evaluated at the end of the study, as there were not many changes seen after initial 10 minutes of airway placements during pilot study. At the end of the surgical procedure, anesthesia was discontinued; patients were reversed with neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg/kg and after adequate reversal, the device was removed. Complications like blood staining of the device, tongue/pharynx trauma, bronchospasm/laryngospasm, major regurgitation/aspiration, hoarseness was recorded after removal of the device in the operating room. Patients were observed in the recovery area for 30 minutes before shifting to postanesthesia care unit. Statistical analysis was done by SPSS version 25. The quantitative variables were expressed as mean and standard deviation (mean ± SD), whereas categorical variables were expressed in frequency percentage. All quantitative variables were analyzed through "Independent sample *t*-test" as they were not present in a normal distribution. However, categorical variables were analyzed by "Chi-square test/Fisher's exact test". P value <0.05 was taken as statistically significant.

RESULTS

In Group I, mean age was 3.44 years and in Group P, mean age was 3.41 years. The p value is 0.45. In Group I, mean weight was 14.87 kg and in Group P, it was 13.38 kg, with the p value of 0.0825 (Table 1). Both p values were statistically not significant. Thus, the patients in our study were comparable with respect to age, weight and eliminating bias.

In Group I, 86.66% patients were male and the remaining 13.33% were female. In Group P, 83.33% cases were male and 16.66% were female. Distribution of male and female patients was uneven in both groups, but was comparable among both groups and it was statistically not significant. In Group I, 90% patients were ASA Class 1 status and 10% patients were ASA Class 2 status. In Group P, 100% patients were ASA Class 1 status and no patients were ASA Class 2 status (Table 2). Number of ASA Class 1 to ASA Class 2 patients was also uneven in both groups, but was comparable and statistically insignificant.

The mean insertion time in Group I was 11.67 seconds and in Group P was 10.77 seconds. The insertion time in both groups was comparable and statistically not significant. The number of attempts taken for insertion of the airway device in Group I and Group P was comparable and statistically not significant (p value 0.612). Insertion in Group I was easy in 28 (93.3%) patients and difficult in 2 (6.7%) patients, and in Group P, it was easy in 16 (53.3%) patients and difficult in 14 (46.7%) patients. So, insertion of I-Gel was easy compared to that of PLMA and the difference was statistically significant (p = 0.001). The proper placement of the airway device in Group I was excellent in 26 (86.7%) patients, and good in 4 (13.3%) patients. The proper placement of airway device in Group P was excellent in 16 (53.3%) patients, and good in 14 (46.7%) patients. So, proper placement of the airway device was better in Group I in comparison with that of Group P and was statistically significant (p = 0.01). The placement of gastric tube was easy in all the patients in whom the study was conducted and both the groups were comparable (Table 3).

Table 1. Age and Weight in Group I and Group P

	I-Gel (Mean ± SD)	PLMA (Mean ± SD)	P value
Age (years)	3.44 ± 0.96	3.41 ± 1.01	0.45
Weight (kg)	14.87 ± 4.78	13.38 ± 3.38	0.0825

Table 2. Gender Distribution and ASA Status in Group I and Group P

	I-Gel (n%)	PLMA (n%)	P value
Gender			
Male	26 (86.66)	25 (83.33)	1.000
Female	4 (13.33)	5 (16.66)	
ASA Class			
Class 1	27 (90)	30 (100)	0.237
Class 2	3 (10)	0 (0.0)	

Table 3. Insertion Time, Number of Attempts, Ease of Insertion, Proper Placement and Complications in Both the Study Groups

Parameters	Group I	Group P	P value
Insertion time in secs	11.67 ± 3.80	10.77 ± 6.10	0.496
Number of attempts			
First	29 (96.7%)	27 (90%)	0.612
Second	1 (3.3%)	3 (10%)	
Ease of insertion			
Easy	28 (93.3%)	16 (53.3%)	0.001
Difficult	2 (6.7%)	14 (46.7%)	
Proper placement			
Good	4 (13.3%)	14 (46.7%)	0.01
Excellent	26 (86.7%)	16 (53.3%)	
Complications			
Present	1 (3.3%)	0 (0%)	1.00
Absent	29 (96.7%)	30 (100%)	

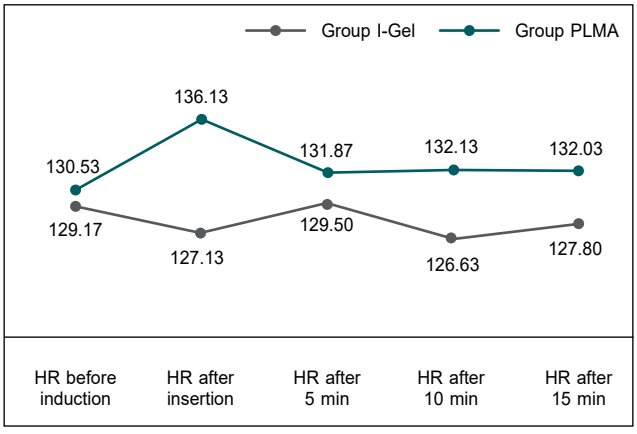

Figure 1. Changes in heart rate in Group I and Group P.

HR = Heart rate.

Table 4. Comparison of Heart Rate in Group I and Group P

	I-Gel (Mean ± SD)	PLMA (Mean ± SD)	P value
HR before induction	129.17 ± 20.35	130.53 ± 19,87	0.793
HR immediately after insertion	127.13 ± 29.92	136.13 ± 21.73	0.188
HR after 5 min	129.50 ± 18.90	131.87 ± 21.25	0.650
HR after 10 min	126.63 ± 18.43	132.13 ± 20.03	0.273
HR after 15 min	127.80 ± 19.61	132.03 ± 21.27	0.426

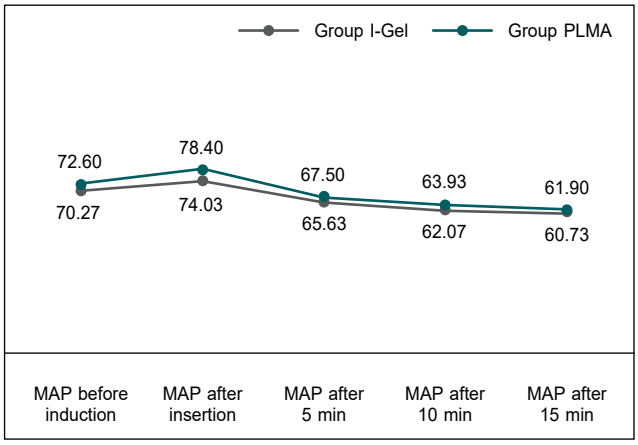

Figure 2. Changes in MAP in Group I and Group P.

MAP = Mean arterial pressure.

Table 5. Comparison of MAP in Group I and Group P

	I-Gel (Mean ± SD)	PLMA (Mean ± SD)	P value
MAP before induction	70.27 ± 9.88	72.60 ± 8.42	0.329
MAP immediately after insertion	74.03 ± 10.22	78.40 ± 9.58	0.093
MAP after 5 min	65.63 ± 7.19	67.50 ± 5.81	0.273
MAP after 10 min	62.07 ± 5.98	63.93 ± 4.81	0.188
MAP after 15 min	60.73 ± 5.72	61.90 ± 4.71	0.392

Though the heart rate was slightly on higher side in Group P (Fig. 1) compared to Group I throughout the monitoring period, the difference was not statistically significant ($p > 0.05$) as mentioned in Table 4. Similarly, the changes in MAP in both groups were similar (Fig. 2) and statistically not significant as shown in Table 5, where p value is >0.05 throughout the study period.

DISCUSSION

Although it has been studied that use of SADs avoids the need for laryngoscopy resulting in less painful stimulation of the airway and hence lesser degree of pressor response, there are very few studies comparing insertion characteristics of I-Gel and PLMA in pediatric patients. In our study, we have compared I-Gel with PLMA with respect to the ease of insertion, proper placement of the airway device and hemodynamic changes during insertion of the device. In this study, the demographic data of patients, like age, sex and body weight, were similar and were comparable in both groups.

Though the insertion time for supraglottic devices in this study was more in Group I (11.67 seconds) compared to Group P (10.77 seconds), the difference was statistically not significant (p = 0.496). Insertion time for I-Gel in our study was longer than a study which achieved I-Gel insertion within 5 seconds.[3] The success rate of insertion of I-Gel was 96.7% in the first attempt which was better than PLMA, for which success rate in first attempt was 90%. But the difference was statistically insignificant (p = 0.612). In a study by Kannaujia et al,[4] the success rate at first attempt was 90%. Similar to our study, the study by Goyal et al[5] showed success rate at first attempt was 95% and success rate at second attempt was 100%. A study by Francksen et al[6] reported that success rate of insertion of I-Gel was 90% in first attempt and overall success rate was 100%. Arslan et al[7] reported a success rate of 100% with PLMA.

Ease of insertion in Group I was easy in 93.3% patients and difficult in 6.7% patients, and in Group P it was easy in 53.3% patients and difficult in 46.7% patients. Insertion of I-Gel was easy compared to PLMA and was statistically significant (p = 0.001). Similar to our study, Singh et al[8] and Goyal et al[5] concluded in their studies that insertion of I-Gel was easier than any other currently available supraglottic devices. But the studies by Theiler et al[9] and Michalek et al[10] concluded that insertion of I-Gel was difficult, likely due to bulky design of I-Gel.

The proper placement of the airway device was better with I-Gel than PLMA. In Group I, the placement of airway device was excellent in 86.7% patients and was good in 13.3% patients. In Group P, the placement of airway device was excellent in 53.3% patients and was good in 46.7% patients. The I-Gel showed higher leak pressures when compared to PLMA by adequate sealing with perilaryngeal structures. This could be attributed to unique noninflatable cuff of I-Gel, which mirrors the perilaryngeal anatomy. The leak pressure of I-Gel improves with time due to thermoelastic material, which forms more efficient airway seal after warming to the body temperature. To obviate this effect, we checked for airway seal after 5 minutes of insertion of I-Gel. The placement of gastric tube was easy in both Group I and Group P and was 100% successful overall. A study conducted by Helmy et al[11] showed success rate of gastric tube insertion was high in I-Gel group.

In our study, the mean heart rate at preinsertion, immediately after insertion, at 5, 10 and 15 minutes were compared. Though the heart rate in PLMA group was on slightly higher side throughout the study period as compared to I-Gel group, the difference in both groups was negligible and when compared with preinsertion value and it was statistically insignificant (p > 0.05). Similarly, in both the groups, the changes in MAP were not statistically significant (p > 0.05). Similar to our study, Mitra et al[12] and Chauhan et al[13] in their studies concluded that hemodynamic changes with insertion of I-Gel were comparable to that of PLMA. Contrary to our study, Jindal et al[14] concluded that I-Gel insertion causes less hemodynamic changes as compared to other supraglottic devices. In this study, we observed complications of insertion of both airway devices. In Group I, one case of laryngospasm had been observed which was managed by deepening plane of anesthesia and positive pressure mask ventilation with 100% oxygen. There were no complications in Group P. Goyal et al[5] found that the incidence of complications, both in PLMA and I-Gel groups, was low. Helmy et al[11] reported that airway trauma was minimal with I-Gel. Our study findings are in consistence with these studies.

So, in our study, we observed that insertion of I-Gel was easier with proper placement compared to PLMA. But when we compared the insertion time, number of attempts needed for insertion and hemodynamic changes with insertion in both our study groups, the results were comparable as seen in many published studies like Mitra et al[12] and Chauhan et al.[13]

CONCLUSION

In this study, based on the results, we concluded that I-Gel is a better supraglottic airway device when compared to PLMA in terms of ease of insertion and proper placement and there are no significant hemodynamic changes with insertion for both devices. But both the airway devices can be safely used to provide anesthesia in elective surgical procedures in pediatric patients.

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Boosters Required to Protect Workers: CDC Director

The Director of the US CDC, Rochelle Walensky, stated that she recommends booster dose of COVID-19 vaccine for at-risk workers in order to protect essential workers and minority communities, in spite of the fact that the advisory committee of the agency has voted against the move.

The government is set to roll out booster doses of the Pfizer/BioNTech vaccine for individuals aged 65 years and above, adults with underlying health conditions and people in high-risk working and institutional settings. Walensky stated that several frontline workers, essential workers and people in congregate settings belong to communities that have already been worst affected, adding that the decision is about providing access rather than withholding it… (*Source: Reuters*)

Standing More may Benefit Sedentary Adults At-Risk of Developing Diabetes

A study published in the *Journal of Science and Medicine in Sport* has suggested that standing more might benefit people who are not otherwise physically very active and have a risk of developing type 2 diabetes and heart disease.

Investigators assessed the data from 64 adults enrolled from the community in 2017 to 2018 aged 40 to 65 years who were sedentary, and inactive (<120 minutes/week of self-reported moderate to vigorous activity), had a body mass index (BMI) of 25-40 kg/m^2, and met the criteria for metabolic syndrome, were nonsmokers or had a previous cardiac event or diabetes. The researchers evaluated the impact of replacing 1 hour/day of sitting with light activity on insulin sensitivity, body fat percentage, and other measures over a period of 6 months. Every day participants took an average of 5,149 steps and 29 breaks from sitting. It was noted that standing more, taking more steps and having better VO_{2max} were tied to greater insulin sensitivity. They were also linked to less insulin resistance after adjusting for sex, age and time spent wearing an accelerometer. More breaks from sitting was also found to be tied to greater insulin sensitivity, but not with less insulin resistance, following similar adjustments… (*Source: Medscape*)

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Hemisection: A Silver Lining for the Mandibular Molar

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ABSTRACT

Hemisection of mandibular molar refers to a procedure involving sectioning a multi-rooted tooth with its crown portion followed by the removal of the sectioned tooth with unfavorable prognosis. Hemisection helps in retention of the tooth which otherwise would have undergone extraction. This case report highlights hemisection of mandibular molar with advanced furcation involvement and concomitant endo-perio lesion. This case report also aims at focusing attention in proper diagnosis, treatment planning and management of teeth with advanced periodontal involvement.

Keywords: Hemisectioning, mandibular molar, restoration

Hemisectioning refers to sectioning of a multi-rooted tooth followed by the removal of the sectioned part of the tooth along with its coronal portion. It is a conservative approach, since relatively less affected portion of the tooth is still retained. Loss of first molar can not only lead to drifting of the teeth, but also cause decrease in the vertical dimension of the jaw due to supraeruption of the opposing teeth. Thus, it becomes prudent to preserve the first molar wherever possible. In case of mandibular molar with endodontic and periodontic involvement, careful management and retention of the tooth is challenging. In such cases, hemisection helps in successfully retaining the tooth. The present case report highlights a case of a 35-year-old male patient with endodontic and periodontic involvement of mandibular left first molar, which was treated with hemisectioning and removal of mesial root.

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CASE REPORT

A 35-year-old male patient reported to the Dept. of Periodontics and Oral Implantology with the chief complaint of mobile tooth in lower left region of jaw since past 1-2 months. Patient was apparently alright 1-2 months ago, when he noticed slight mobility in lower left back region of jaw. With passing days, the patient started experiencing difficulty while chewing food and hence reported to the department for treatment of the same. The patient did not present with relevant medical or family history. Past dental history revealed history of root canal treatment with mandibular left first molar 9 years ago and history of re-root canal treatment with the same tooth 6 years ago with recurring abscess in the same region.

Examination

On intraoral examination, the mandibular left first molar presented with Grade I mobility and Grade III Glickman's furcation involvement. The tooth was sensitive on percussion. On probing, the tooth revealed a probing pocket depth of 10 mm on the mesial aspect and 5 mm on the distal aspect. Intraoral periapical radiograph revealed bone loss in the region of furcation (Fig. 1). Bone loss could be observed on the mesial aspect of the mandibular molar. The radiograph also revealed adequate obturation for the tooth. The hematological investigations revealed blood parameters within normal range. Plaque disclosing agent was applied and Turesky-Gilmore-Glickman's modification of the Quigley Hein plaque (1970) index was recorded, which gave a score

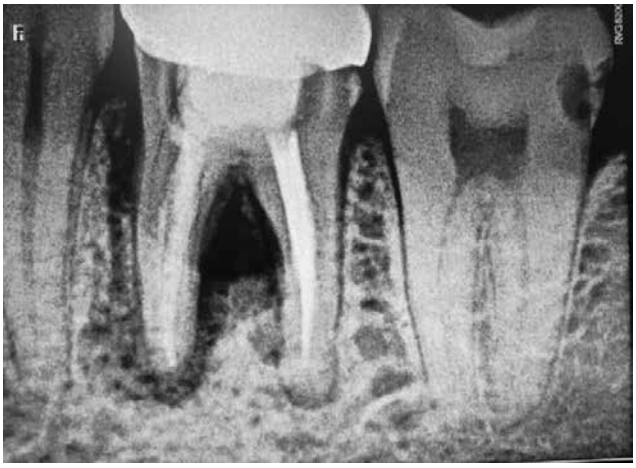

Figure 1. Preoperative radiograph.

of 1.2, indicating low plaque score. The gingival index by Loe and Silness (1963) gave a score of 0.9, inferring to mild gingivitis. Intraoral examination also revealed presence of supragingival calculus.

After thorough examination, full mouth scaling was carried out.

Diagnosis

Taking into consideration the history of the patient, diagnosis was given as "Dental biofilm associated gingivitis and localized periodontitis" based on 2017 World Workshop on the Classification of Periodontal and Peri-Implant Disease and Conditions.

Management

Full mouth scaling was carried out and patient was advised 0.2% chlorhexidine mouthwash twice a day. The patient was appointed for follow-up and the area was re-evaluated. At follow-up visit, there was decrease in gingival inflammation. There was no decrease in the mobility and probing pocket depths. The patient was appointed for periodontal flap surgery.

Two percent lignocaine with 1:80,000 adrenaline was injected as local anesthetic agent. Figures 2 and 3 show preoperative buccal and lingual view. With a 15 No BP blade, intracrevicular incisons were given extending from distal half of mandibular second premolar to mesial half of mandibular second molar. A full thickness mucoperiosteal flap was raised. With the help of Gracey's curettes, granulation tissue was removed. After debridement of the area, a vertical fracture line was seen (Figs. 4 and 5). The vertical fracture involved the mesial part of the mandibular left first molar. It was decided to section the tooth and remove the mesial part of the tooth with vertical fracture and retain the distal

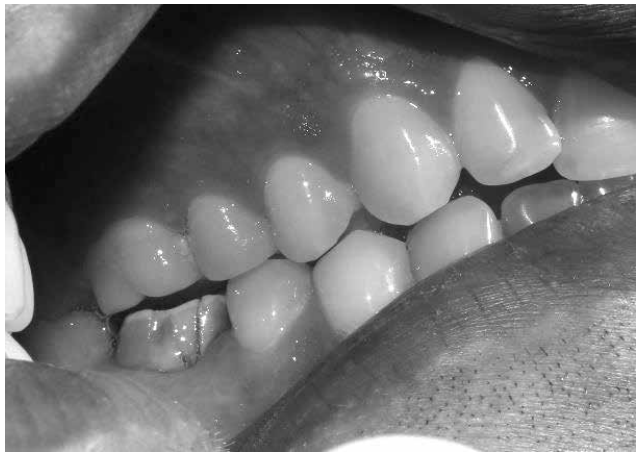

Figure 2. Preoperative photograph showing the buccal view.

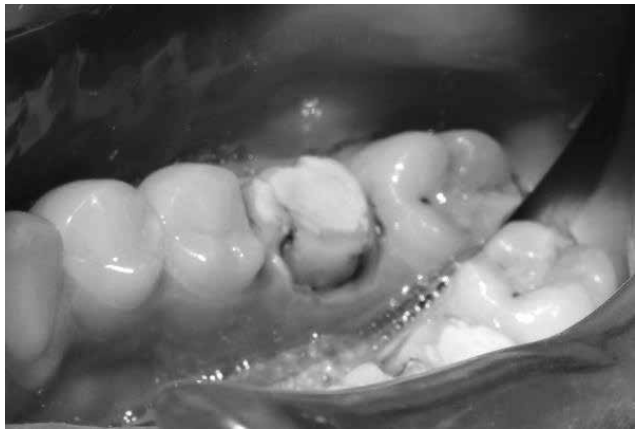

Figure 3. Preoperative photograph showing the lingual view.

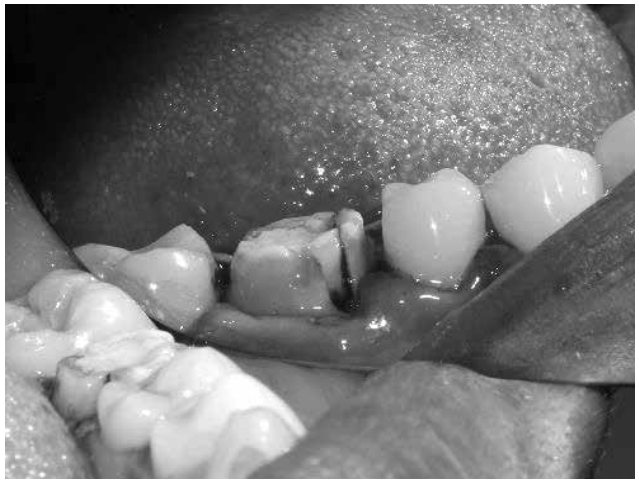

Figure 4. Intraoperative buccal view showing vertical fracture.

root, which had adequate bone support. The distal half of the mandibular molar was relatively unaffected by the vertical fracture. Vertical sectioning was carried out

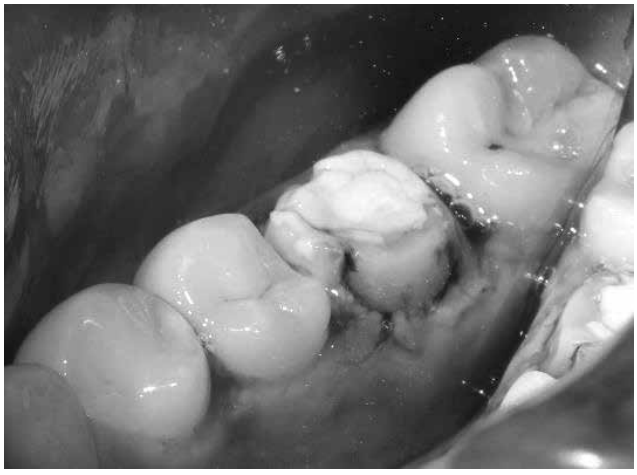

Figure 5. Intraoperative lingual view showing the vertical fracture.

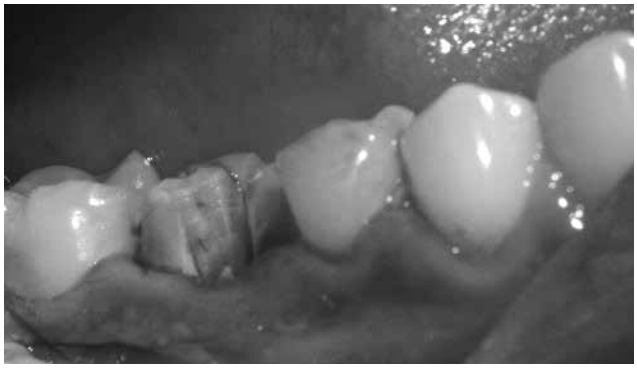

Figure 6. Intraoperative buccal view after sectioning of the mandibular molar.

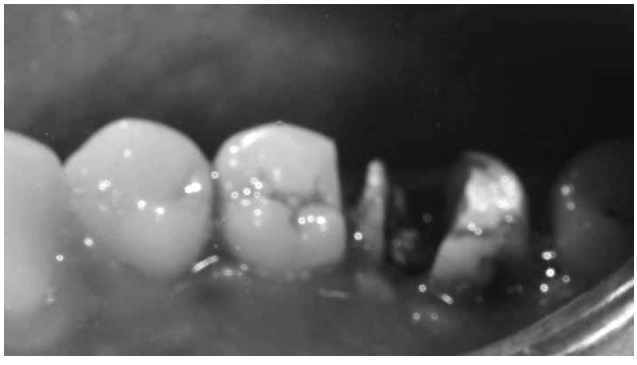

Figure 7. Intraoperative lingual view after sectioning of the mandibular molar.

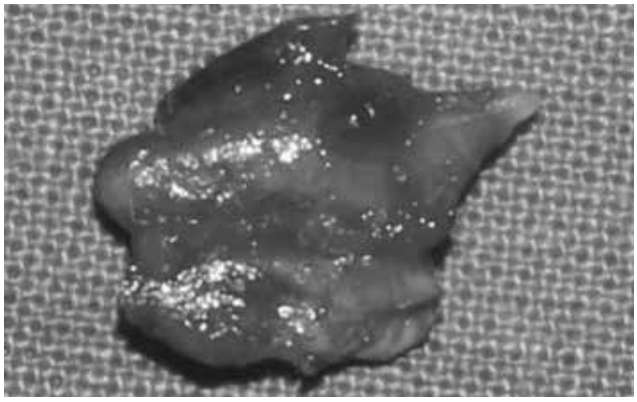

Figure 8. Hemisected mesial root.

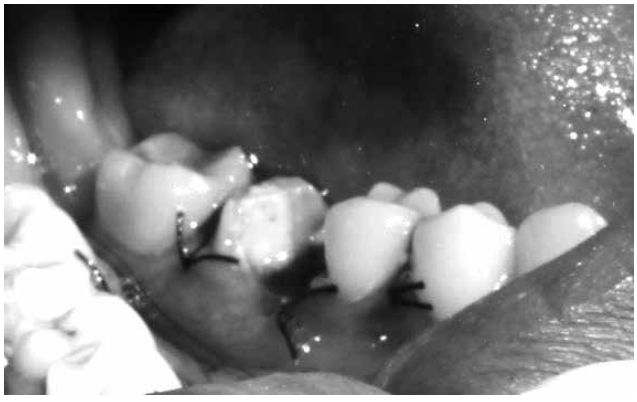

Figure 9. 3-0 interrupted silk sutures placement.

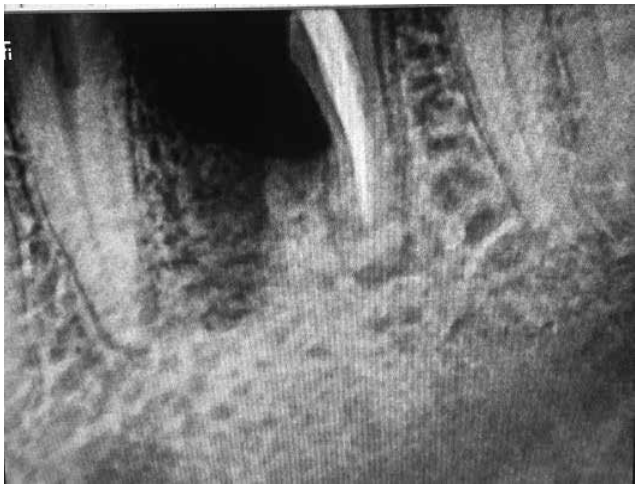

Figure 10. Six months postoperative radiograph.

with the help of long shank tapered fissure carbide bur (Figs. 6 and 7). Probe was passed between the two halves of the sectioned tooth to confirm adequate separation has taken place. After verifying sufficient separation, the mesial half of the mandibular molar was removed (Fig. 8). The extraction socket was curetted and irrigated with betadine and saline. The part of the distal root that could be approached after the removal of mesial root, was curetted. The sharp edges of the retained distal root were rounded off. The occlusal table of the retained tooth was relieved to redirect the occlusal forces acting along the long axis of the tooth. The flap was positioned back and 3-0 silk interrupted sutures were placed (Fig. 9). Postoperative analgesics and antibiotics were prescribed. The patient was advised to continue the usage of 0.2% chlorhexidine mouthwash. The patient

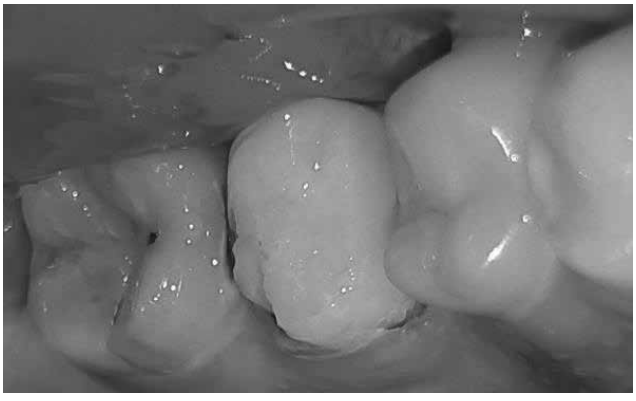

Figure 11. After composite build-up of the tooth.

was recalled for suture removal after 1 week. The patient was followed-up on monthly basis. At 6-month follow-up, the distal section of the tooth did not show any mobility. Intraoral periapical radiograph showed adequate amount of remaining bone present and no further bone loss was observed (Fig. 10). The tooth was built up and restored prosthetically (Fig. 11).

DISCUSSION

The process of hemisection is technique sensitive. In the present case report, endodontic treatment was already carried out. In endodontic-periodontic lesions, endodontic treatment should be carried out before initiating periodontic therapy. By doing this, it helps in eliminating focus of infection and thus preventing re-infection. In addition, there is decrease in postoperative hypersensitivity and intrapulpal dystrophic calcification. Periodontal therapy was indicated as the bone loss in the furcation area was advanced and was not likely to resolve after initial nonsurgical periodontal treatment. In the present case, vertical fracture could only be observed after opening of the flap. As the distal root of the molar showed good amount of remaining bone support and no periapical infection, it was decided to retain the distal root and perform hemisection of the mesial root involving the vertical fracture. Hemisection helps in eliminating furcation region, thus preventing further attachment loss and making oral hygiene maintenance possible. While performing hemisection, the root length, morphology of the roots and the root separation should be taken into consideration. As the roots of mandibular left first molar were adequately separated and were straight in this case, hemisection could easily be carried out. The mandibular molars with periodontal involvement can be maintained after hemisection for a long time depending upon the amount of periodontal destruction. After hemisection, there are chances of increased occlusal forces on the retained tooth section, which can lead to tooth loss due to root fracture. Hence, it is advised to relieve the occlusal table to redirect the occlusal forces.

A tooth with severe endodontic and periodontic involvement with advanced bone loss usually is indicated for extraction as it is challenging to manage such cases and prevent reinfection. Functionally restoring the tooth after extraction can be difficult at times and also can increase the cost of treatment for the patient. Hence, it is judicious to perform hemisection on a multi-rooted root as an attempt to not only preserve the tooth but also decrease the cost of the treatment.

CONCLUSION

The present case report focuses attention on diagnosis and conservative treatment of a tooth with endodontic-periodontic involvement. Proper periodontal maintenance can help in long-term survival of hemisected tooth. Hemisection thus is a viable conservative treatment option for a tooth for its long-term retention.

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Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

Efficacy of Topical Eberconazole in the Treatment of Tinea Cruris and Tinea Corporis

CHITRA NAYAK

Tinea infections are the widely prevalent superficial fungal infections. Of these, the most common ones are tinea corporis, tinea cruris and tinea pedis. These infections are caused by organisms known as dermatophytes, with *Trichophyton rubrum* accounting for a majority of dermatophytosis, including tinea pedis, tinea corporis and tinea cruris.[1]

Several studies pertaining to the treatment of tinea corporis and tinea cruris have unravelled the effectiveness of topical antifungals.[2] The current case also shows the efficacy of a topical antifungal, eberconazole in treating a patient with tinea corporis and tinea cruris.

CASE PRESENTATION

A 42-year-old married female presented with the chief complaint of itchy rashes in the groin and on the right thigh since 3 to 4 weeks.

History

The patient had been diagnosed with relapsing polychondritis in the past and was treated with oral prednisolone 40 mg daily for 3 weeks, which was tapered slowly over a period of 3 months. She was also given tablet cyclophosphamide 50 mg once daily in the morning with instructions to have plenty of fluids. In addition, oral chymotrypsin and diclofenac tablets were given in the initial 2 weeks to relieve her pain and swelling of the ears. Moreover, adjunctive treatment with calcium and vitamin D tablets was also prescribed. About a month into her treatment for relapsing polychondritis, she complained of an itchy rash in her groin and on her right thigh.

Examination

On examination, there were patches with circinate configuration and superficial scaling in her groin and on her right thigh (Fig. 1). The patch on right thigh was markedly erythematous.

Provisional Diagnosis

The lesions were diagnosed to be tinea cruris and tinea corporis.

Management

The patient was prescribed miconazole 2% cream to be applied twice daily for 2 weeks; however, there was no improvement in the lesions. She was then prescribed topical eberconazole 1% cream which had to be applied twice daily for 2 weeks in view of the fact that she was on oral prednisolone and cyclophosphamide, a nonsteroidal immunosuppressant.

At follow-up visit, the lesion in her groin had healed with post-inflammatory hyperpigmentation. The lesion on her thigh had healed with post-inflammatory hypopigmentation (Fig. 2). Considering the current scenario of frequently relapsing/recurring

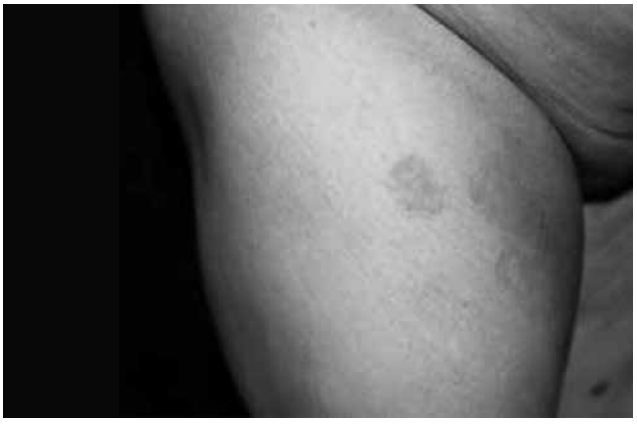

Figure 1. Circinate scaly patches in groin and on right thigh.

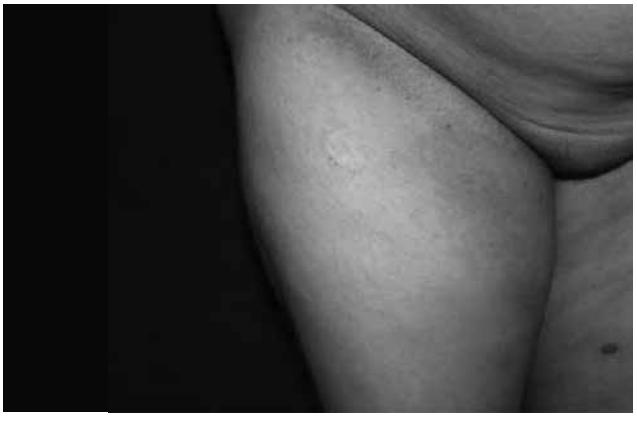

Figure 2. Healed lesions with post-inflammatory changes.

dermatophytic infections and the fact that she was on immunosuppressant therapy, she was asked to continue applying eberconazole 1% cream for another 6 weeks on the post-inflammatory changes. After 2 months, the patient did not have any new lesions.

DISCUSSION

Eberconazole, a drug belonging to the class of imidazole displays a wide-spectrum of antifungal activity. An added advantage of this drug is its anti-inflammatory action that makes it different from other agents of its class. Its mechanism of action involves inhibition of fungal lanosterol 14α-demethylase.[3]

A wealth of data suggests the efficacy of this agent in the treatment of dermatophytic infections including tinea corporis and tinea cruris.[3,4] According to a comparative study that assessed the *in vitro* activities of 4 topical antifungal drugs, eberconazole, clotrimazole, ketoconazole and miconazole against 200 strains of dermatophytes, eberconazole was found to be more active than the other three drugs against most of the species tested.[4] Effectiveness of eberconazole 1% cream was further supported by the findings of another study that compared it with miconazole 2% cream. In this double-blind study, use of eberconazole 1% cream for 4 weeks helped in achieving effective response in 76.09% patients, while the figure was 75% in the miconazole-treated group.[3]

CONCLUSION

On the basis of the above-mentioned data, it can be suggested that eberconazole appears to be a suitable drug for treating dermatophytosis. In this patient, its use proved to be beneficial for obtaining favorable outcomes.

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■■■■

FDA Approves Evolocumab Add-On for Familial Hypercholesterolemia in Children Aged 10 and Older

Evolocumab has been approved by the US FDA as add-on treatment to diet alone or with other therapies among children aged 10 years and above having either heterozygous or homozygous familial hypercholesterolemia (FH). The approval was based on randomized trials of evolocumab in both heterozygous and homozygous FH. The HAUSER-RCT trial enrolled patients 10 to 17 years of age with heterozygous FH, taking statins with or without ezetimibe. Patients were randomized to monthly subcutaneous injections of evolocumab (420 mg) or placebo for a period of 24 weeks. There was an average 38% reduction in low-density lipoprotein (LDL) cholesterol among treated patients. The findings were published in the *New England Journal of Medicine* in August, 2020. Another trial involving patients aged 11 to 17 years with homozygous FH noted that patients treated with evolocumab subcutaneous injection (420 mg) monthly given for 80 weeks reported an average 14% reduction in LDL cholesterol, in comparison with the baseline… (*Source: Medscape*)

High Levels of Antibodies Passed from Vaccinated Pregnant Women to Babies

A new study suggests that pregnant women who receive an mRNA COVID-19 vaccine pass high levels of protective antibodies to their babies. Investigators assessed umbilical cord blood from 36 newborns whose mothers had been administered at least one dose of Pfizer/BioNTech or Moderna COVID-19 vaccine. All 36 newborns were found to have high levels of antibodies known to target the spike protein. All the antibodies could be traced to the mothers' vaccinations. The findings thus suggest that the antibodies that the mother develops following vaccination cross the placenta and likely confer benefits for the infant after birth, stated study coauthor Dr Ashley Roman, NYU Langone Health, New York City. However, it is not known if the timing of vaccination during pregnancy is tied to antibody levels in the baby. It is also not clear as to how long these antibodies persist in the baby. The findings are published in the *American Journal of Obstetrics and Gynecology - Maternal Fetal Medicine…* (*Source: Reuters*)

Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

Professional Duties and Responsibilities

What should be the character attributes of a doctor as defined by the MCI?

Section 1.1 of MCI Code of Ethics Regulations 2002 has defined the character of doctors.

1.1.1 A physician shall uphold the dignity and honour of his profession.

1.1.2 The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Who-so-ever chooses his profession, assumes the obligation to conduct himself in accordance with its ideals. A physician should be an upright man, instructed in the art of healings. He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, prompt in discharging his duty without anxiety; conducting himself with propriety in his profession and in all the actions of his life.

Can a person who has obtained qualification in any other system of medicine practice modern system of medicine?

No, a person who holds a degree in other systems of medicine cannot practice modern system of medicine or Allopathy. Section 1.1.3 of the Indian Medical Council Act is very clear on this issue.

1.1.3 No person other than a doctor having qualification recognised by Medical Council of India and registered with Medical Council of India/State Medical Council (s) is allowed to practice Modern system of Medicine or Surgery. A person obtaining qualification in any other system of Medicine is not allowed to practice Modern system of Medicine in any form.

Is membership in a medical society/association mandatory for a doctor?

The MCI has issued guidelines in this regard as below.

1.2.2 Membership in Medical Society: For the advancement of his profession, a physician should affiliate with associations and societies of allopathic medical professions and involve actively in the functioning of such bodies.

1.2.3 A physician should participate in professional meetings as part of Continuing Medical Education programmes, for at least 30 hours every five years, organized by reputed professional academic bodies or any other authorized organisations. The compliance of this requirement shall be informed regularly to Medical Council of India or the State Medical Councils as the case may be.

Are you guilty of evading any other law?

1.9 Evasion of Legal Restrictions: The physician shall observe the laws of the country in regulating the practice of medicine and shall also not assist others to evade such laws. He should be cooperative in observance and enforcement of sanitary laws and regulations in the interest of public health. A physician should observe the provisions of the State Acts like Drugs and Cosmetics Act, 1940; Pharmacy Act, 1948; Narcotic Drugs and Psychotropic substances Act, 1985; Medical Termination of Pregnancy Act, 1971; Transplantation of Human Organ Act, 1994; Mental Health Act, 1987; Environmental Protection Act, 1986; Pre-natal Sex Determination Test Act, 1994; Drugs and Magic Remedies (Objectionable Advertisement) Act, 1954; Persons with Disabilities (Equal Opportunities and Full Participation) Act, 1995 and Bio-Medical Waste (Management and Handling) Rules, 1998 and such other Acts, Rules, Regulations made by the Central/State Governments or local Administrative Bodies or any other relevant Act relating to the protection and promotion of public health.

What are the duties of a physician towards his/her patients?

As per Chapter 2 of the Indian Medical Council Act.

2.1 Obligations to the Sick:

2.1.1 Though a physician is not bound to treat each and every person asking his services, he should not only be ever ready to respond to the calls of the sick and the injured, but should be mindful of the high character of his mission and the responsibility he discharges in the course of his professional duties. In his treatment, he should never forget that the health and the lives of those entrusted to his care depend on his skill and attention. A physician should endeavour to add to the comfort of the sick by making his visits at the hour indicated to the patients. A physician advising a patient to seek service of another physician is acceptable; however, in case of emergency a physician must treat the patient. No physician shall arbitrarily refuse treatment to a patient. However for good reason, when a patient is suffering from an ailment which is not within the range of experience of the treating physician, the physician

may refuse treatment and refer the patient to another physician.

2.1.2 Medical practitioner having any incapacity detrimental to the patient or which can affect his performance vis-à-vis the patient is not permitted to practice his profession.

Can a doctor divulge information about the patient that he has learnt during consultation?

As per section 2.2 Patience, Delicacy and Secrecy, a doctor should not divulge any information about the patient that he has come across during his consultation.

2.2 Patience, Delicacy and Secrecy: Patience and delicacy should characterize the physician. Confidences concerning individual or domestic life entrusted by patients to a physician and defects in the disposition or character of patients observed during medical attendance should never be revealed unless their revelation is required by the laws of the State. Sometimes, however, a physician must determine whether his duty to society requires him to employ knowledge, obtained through confidence as a physician, to protect a healthy person against a communicable disease to which he is about to be exposed. In such instance, the physician should act as he would wish another to act toward one of his own family in like circumstances.

Is the doctor bound to attend every patient?

A doctor is not bound to attend every patient. As per Section 2.4, The Patient must not be neglected: "A physician is free to choose whom he will serve. He should, however, respond to any request for his assistance in an emergency. Once having undertaken a case, the physician should not neglect the patient, nor should he withdraw from the case without giving adequate notice to the patient and his family. Provisionally or fully registered medical practitioner shall not willfully commit an act of negligence that may deprive his patient or patients from necessary medical care."

When should a treating doctor seek a consultation?

Unnecessary consultations should be avoided as per section 3.1. However in case of serious illness and in doubtful or difficult conditions, the physician should request consultation, but under any circumstances such consultation should be justifiable and in the interest of the patient only and not for any other consideration (Section 3.1.1). Consulting pathologists/radiologists or asking for any other diagnostic Lab investigation should be done judiciously and not in a routine manner (Section 3.1.2).

In every consultation, the benefit to the patient is of foremost importance. All physicians engaged in the case should be frank with the patient and his attendants (Section 3.2).

Can a patient complain about the doctor making him wait for a consultation?

Yes; doctors should be punctual so that patients do not have to wait for a long time to see their doctor. Section 3.3 Punctuality in Consultation says, "Utmost punctuality should be observed by a physician in making themselves available for consultations."

Should difference of opinion after consultation be conveyed to the patient?

Section 3.4 Statement to Patient after Consultation clarifies this as below.

3.4.1 All statements to the patient or his representatives should take place in the presence of the consulting physicians, except as otherwise agreed. The disclosure of the opinion to the patient or his relatives or friends shall rest with the medical attendant.

3.4.2 Differences of opinion should not be divulged unnecessarily but when there is irreconcilable difference of opinion the circumstances should be frankly and impartially explained to the patient or his relatives or friends. It would be opened to them to seek further advice as they so desire.

What are the MCI guidelines regarding fees and other charges?

3.7 Fees and other charges:

3.7.1 A physician shall clearly display his fees and other charges on the board of his chamber and/or the hospitals he is visiting. Prescription should also make clear if the Physician himself dispensed any medicine.

What the responsibilities of doctors towards each other?

Chapter 4 of the MCI Act talks about the responsibilities of physicians to each other and states as follows: "A physician should consider it as a pleasure and privilege to render gratuitous service to all physicians and their immediate family dependants."

4.2 Conduct in consultation: In consultations, no insincerity, rivalry or envy should be indulged in. All due respect should be observed towards the physician in-charge of the case and no statement or remark be made, which would impair the confidence reposed in him. For this purpose no discussion should be carried on in the presence of the patient or his representatives.

Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

HCFI Dr KK Aggarwal Research Fund

HCFI Round Table Expert Zoom Meeting on "COVID-19 in Children and Medical Masks"

28th August, 2021 (11 am-12 pm)

Key points of HCFI Expert Round Table

COVID-19 in children

- The true incidence of coronavirus disease 2019 (COVID-19) in children is not known. This is due to lack of widespread testing, prioritization of tests for adults, less severe illness and fewer hospitalizations in children.
- There should be a high index of suspicion for COVID-19 in children with fever.
- In the US, children below 18 years of age constituted 12% of all cases with less than 2% requiring hospitalization. In European countries, around 9% children were affected, of which 3.5% needed intensive care.
- In Nepal, children <20 years of age accounted for nearly 9% of total cases and in Bangladesh, this figure was 10%.
- As per the National Centre for Disease Control (NCDC) data, less than 12% of confirmed cases were children younger than 20 years and around 4% were children below 10 years of age.
- At CNBC, out of the total positive 9.5% cases, the positive pediatric cases were 3.9% and 0.4% required hospitalization.
- Classical COVID-19 symptoms are fever, sore throat, headache, myalgia, fatigue, coryza, poor feeding in an infant and loss of taste/smell in children older than 8 years. The atypical symptoms are diarrhea, vomiting, abdominal pain, rash, COVID toes.
- Infection may be asymptomatic when the child is diagnosed while screening other family members. The infection can be mild (SpO_2 >94%), moderate (SpO_2 90-93%) or severe (SpO_2 <90%).
- Children likely have similar viral loads in the nasopharynx, similar secondary infection rates and can also spread the infection to others.
- Risk factors for severe COVID-19 include obesity, diabetes, severe malnutrition, malignancy, immunosuppression.
- Remdesivir is not recommended in children. Computed tomography (CT) chest is indicated only if there is no improvement in respiratory status. Likewise, steroids are indicated only in severe and critically ill cases.
- Multisystem inflammatory syndrome in children (MIS-C) is also called pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS). It typically appears 4 to 6 weeks after the infection.
- It is important to be able to suspect and correctly diagnose MIS-C, know the list of investigations to be used judiciously, appropriate line of treatment and when to refer the child.
- Some children with MIS-C may later develop hyperinflammatory disease with manifestations similar to Kawasaki disease or toxic shock syndrome.
- Patients with Kawasaki disease diagnosed during and after COVID-19 differed from those diagnosed before, clinically and biochemically, and therefore were classified as Kawasaki-like disease. They were older, had respiratory and gastrointestinal (GI) involvement, and signs of cardiovascular involvement. They had leukopenia with marked lymphopenia, thrombocytopenia, increased ferritin and had markers of myocarditis. The disease was more severe.
- Several studies have characterized MIS-C in the pediatric age group.
- Tier 1 tests include complete blood count (CBC) with differential counts, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), reverse transcription polymerase chain reaction (RT-PCR) for SARS-CoV-2, dengue serology, peripheral smear (PS) for malaria, blood culture, electrolytes, liver function test (LFT) and kidney function test (KFT).
- Tier 2 tests include ferritin, lactate dehydrogenase (LDH), prothrombin time/activated partial thromboplastin time (PT/aPTT), fibrinogen, D-dimer, chest X-ray, echo, ECG, troponin-I, interleukin (IL)-6, B-type natriuretic peptide (BNP) and creatine kinase (CK).
- Tropical fevers, toxic shock syndrome and bacterial sepsis must be excluded before making a diagnosis of MIS-C.

- MIS-C treatment involves immunomodulatory treatment (intravenous immunoglobulin [IVIg], steroids, IL-6 antagonists, IL-1 antagonists and tumor necrosis factor [TNF]-α inhibitors) and supportive treatment (oxygen, IV fluids, paracetamol, anticoagulants).
- MIS-C is diagnosed only in the presence of a hyperinflammatory state.
- Discharge criteria include 3 to 4 days of declining inflammatory markers, afebrile/without supplemental oxygen/inotropes for 48 hours, heart failure controlled on oral medication, findings stable on echocardiography (to be repeated 7-14 days and 4-6 weeks post-discharge).
- Overall prognosis is good and most patients usually recover.
- It has been shown that children have a significant fear of COVID-19, boredom and sleep disturbances.
- Families should be helped to recognize the signs of stress, such as sadness, unhealthy eating or sleeping habits, difficulty with attention and concentration. Some children may become silent, while some may express anger and be hyperactive.
- Maintain a normal routine and keep them active, talk to and listen to children, give them accurate information and encourage them to connect to friends and family through video calls.
- Keep up with routine immunizations and routine check-ups for comorbidities.
- Nutritional care of COVID-positive children is essential; enteral feeding is preferred; if child not accepting orally, then nasogastric feeding.
- Mothers should be encouraged to breastfeed while taking all infection prevention measures.
- Maintenance fluid requirement for a 25 kg child is around 1,600 mL.
- Clinical monitoring includes fever, respiratory rate, SpO_2, activity level, feed intake and urine output.
- Red flag signs include child becoming lethargic, not accepting feeds and vomiting, not passing urine, high respiratory rate, chest in drawing, SpO_2 <94%, cold palms and soles and bluish discoloration of body.
- Children with severe COVID-19 particularly require enhanced care and follow-up for likely complications such as infections – pneumonia, mucormycosis. Home SpO_2 monitoring with pulse oximeter for such children is advised.
- Family should be counseled to watch for signs of stress and anxiety and advised about warning signs (fever, fall in SpO_2, increased cough or dyspnea, headache, tooth pain, nasal blockage).
- All family members should practice infection prevention measures after discharge at home and work places.
- Masking is not recommended for children younger than 5 years.
- Schools should be reopened in a phased manner with adequate mitigating measures in place.
- Preparation for the third wave is very crucial. This includes identifying facilities for managing pediatric COVID cases, strengthening of pediatric tertiary care centers and establishment of pediatric beds and ICUs.

Excerpts from presentation by Dr Mamta Jajoo, Professor Pediatrics, Chacha Nehru Bal Chikitsalaya, Delhi

Medical masks

- India needs to mask up to avoid the third wave. The pandemic is still ongoing and is not close to being over. With the emergence of newer virulent strains, such as the Delta variant, it is very important to protect ourselves.
- Even with full vaccination, we must continue to wear a mask. Masks are the new normal.
- Compliance to masks in India is low, despite the deadly second wave. People do not wear masks properly as also shown in a recent study, wherein 67% of citizens failed to comply with proper masking. Crowds are common and social distancing is not adhered to.
- Masks are simple and mandatory barriers, which protect from respiratory droplets.
- Masks can be said to be the personal protective equipment (PPE) for the public during the ongoing pandemic.
- Universal masking is one of the most important prevention strategies recommended by the Health Ministry and the Centers for Disease Control and Prevention (CDC) to slow the spread of the virus.
- Common masks filter about 10% of exhaled aerosol droplets due to problems with the fit, whereas the N95 and KN95 masks filter more than 50% of the aerosols.
- A disposable surgical mask is fluid resistant and protects against larger particles (5 microns in size),

droplets and spray. The N95 mask, on the other hand, also blocks at least 95% of very small particles (0.3 microns). The size of the coronavirus is 0.3 micron.

- The Research For Resurgence Foundation (RFRF) strongly recommends use of masks of higher filtration capability for effective control of the Delta plus variant.
- A fabric mask or even surgical mask is not the right mask to filter out any or all forms of virus.
- The first layer (outer; dark blue or green) of a disposable surgical mask is the fluid-repellent layer and is to be worn outwards. The third layer (inner; white) is the absorbent layer and is to be worn inside. The second layer (melt blown material infused in a nonwoven fabric) is the filtering layer.
- A tight fitting N95 surgical mask achieves a close facial fit and guarantees minimal leakage from the edges of the mask on inhalation. The N95 respirator reduces exposure to small particles and large droplets.
- National Institute of Occupational Safety and Health (NIOSH), South India Textile and Research Association (SITRA) and Institute of Nuclear Medicine and Allied Sciences (INMAS) are the three agencies that have been authorized to test the efficacy of the masks and PPE kits. NIOSH/SITRA certification is mandatory for the masks.
- Factors important for optimal protection are good fit, high filtrating efficiency, high fluid resistance of the outermost layer, high thread count and good breathability. Washability without affecting the structure and efficiency are additional factors for good effectiveness.
- More than the number of layers, the filtering fabric makes the mask more efficient to prevent virus entry.
- Many masks are being sold that do not conform with the SITRA tests.
- The CDC and the Health Ministry recommend double masking to slow the spread of COVID-19. If the two masks fit well, they can produce an overall efficiency of more than 90% for particles sized 1 micron and larger.
- Coating of masks can filter virus and bacteria to nearly 100%. It also provides splash resistance to up to 140 mmHg. The coating is embedded in the cotton fabric pores.
- Biodegradable nanosilver coated masks are also available.

Excerpts from a presentation by Prof (Dr) Ashok Gupta, Recipient of Padma Shri, Bombay Hospital Institute of Medical Sciences, Mumbai

Participants: Dr Ashok Gupta, Dr Suneela Garg, Dr Anita Chakravarti, Dr Arun Jamkar, Dr Mamta Jajoo, Prof Bejon Misra, Dr DR Rai, Dr Jayakrishna Alapet, Dr KK Kalra, Dr Anil Kumar, Dr B Kapoor, Mrs Upasana Arora, Ms Ira Gupta, Ms Balbir Verma, Ms Priyanka Bapna, Mr Rajesh Chopra, Mr Saurabh Aggarwal, Dr S Sharma

HCFI Round Table Expert Zoom Meeting on "Medical Masks: Coating of Masks, Double Masking – Part 2"

4th September, 2021 (11 am-12 pm)

Key points of HCFI Expert Round Table

- Many people buy N95 masks to reduce their risk of getting COVID-19. But, health regulatory authorities recommend that the use of N95 masks be limited to healthcare workers.
- There are several counterfeit brands sold in the market, particularly in the developing countries. This raises safety concerns.
- Only patented technologies which have international certification and are based on peer reviewed evidence should be used.
- Nonwoven masks are manufactured using plastic variants such as polypropylene to provide protection against infections.
- Asia Pacific has emerged as the largest market for disposable face masks in 2019. India and China are among the largest manufacturers of disposable face masks. Hence, adherence to quality of masks is essential.
- Face masks are a ticking bomb; every minute, 3 million masks are thrown out and act as a source for other infections and toxicants in the environment.
- Certifications or patents are not enough to determine credibility. Stricter regulations on product testing for claims of manufacturers are essentail to ensure the effectiveness of the product advertised.
- Washable and reusable masks are favored. Face masks in esthetically appealing designs and prints to attract the consumer are available in the market.
- Silver has antimicrobial properties, which have been well-documented. The potential antiviral

mechanisms of silver nanoparticles are binding interaction with viral envelope proteins and inhibiting the virus from binding to the host's cell membrane. Size of nanoparticles has been thought to influence their antiviral efficiency.

- It is necessary to implement well-defined evaluation parameters and quality control protocols to improve product quality and consumer trust.
- Reusable face masks can be laundered for reuse (maximum 50 cycles).
- American Society for Testing and Materials (ASTM) Level 1 masks are for procedures in which there is low risk of fluid exposure (no fluid, splashes or sprays expected).
- ASTM Level 2 is for procedures in which there is moderate risk of fluid exposure (aerosols, splashes or sprays).
- ASTM Level 3 is for procedures in which there is heavy exposure to fluid (aerosols, splashes or sprays).
- Consumer Product Safety Commission (CPSC) under the Consumer Product Safety Act is charged with protecting the public from unreasonable risks of injury or death associated with the use of different types of consumer products under its jurisdiction.
- A face mask should have at least three layers: Inner absorbent layer made of a coated/absorbent cotton, middle filter layer made up of nonwoven material and outer fluid repellent layer.
- International Organization for Standardization (ISO), ASTM, NIOSH, SITRA, INMAS provide certifications to ensure the validity of claims of the manufacturer.
- Two innovations by IIT scientists have created a coating for masks that kill viruses within minutes: Nano coating system and a cloth mask coated with a biodegradable, biocompatible and nonirritant system.
- Antibacterial properties of silver are known for a long time. Use of silver in larger concentrations is harmful.
- Apart from the size, concentration of silver used, and the mask layer on which it is coated, a direct contact with hands also matters. A nanoparticle is <100 nm.
- Silver nanoparticles can have adverse effects on health in both animals and humans via dermal, respiratory and oral routes. Some airborne particles are released from nanoparticle impregnated products, even when nanoparticles are embedded inside the fibers.
- NIOSH has suggested an exposure limit of 0.9 $\mu g/m^3$ over 8 hours for respirable silver particles that are <100 nm in size.
- Environmental Protection Agency (EPA) prohibits manufacturers from advertising antimicrobial claims without proper registration of the product as a pesticide.
- Antiviral or antibacterial claims on products are also not allowed in accordance with Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).
- IIT Mumbai has developed a coating technology called Duraprot (durable + protection), which has been patented. Every nanotechnology that is developed is first evaluated for toxicity. The silver coating technology was also evaluated for any toxic or mucosal irritant effect.
- The coating material is a nanoemulsion of several bio-based materials. All ingredients are Food and Drug Administration (FDA) Generally Recognized As Safe (GRAS) approved materials, they are natural or naturally derived. The material is biodegradable, biocompatible and nonirritant.
- It is cross-linked to the fibers of the mask and retains its efficacy for until 20 wash cycles. It can be coated on cotton, polyester, viscose and rayon. It is easy to make and easy to coat.
- It has charge-based attraction and killing mechanism. Its anti-SARS-CoV-2 activity has been demonstrated by RT-PCR method. The swab (viral transport medium) was coated with the nanoemulsion.
- Any product which has health implications is supposed to be regulated, i.e., product standards have to be specified by law.
- Medical devices were earlier regulated as drugs by the Central Drugs Standard Control Organisation (CDSCO). All masks used for medical purposes are medical devices. Until February 2020, the Government had regulated or notified 37 categories of medical devices as drugs. In February 2020, CDSCO notified the definition of medical device. Any product, including masks, which falls under the definition, would deem to be regulated by the rules.

- From April 2020, all manufacturers of non-notified medical products/devices were given an option to register voluntarily along with ISO 13485 certification, which is for quality management. This period of voluntary registration ends on September 30. After this registration becomes compulsory. All products used during COVID – masks, PPE, oxygen concentrator, pulse oximeter, ventilators - are therefore unregulated as on today (as on the day of the meeting). However, product certification does not require product compliance yet.
- For Class A and B products, the CDSCO has given 1 year's time to comply with the legal requirements for the product.
- The standards prescribed are the Bureau of Indian Standards' (BIS) standards. From August 2022, compliance to BIS standards would be mandatory in order to sell a product in the market.
- The Health Ministry guidelines for PPE kits still talk of foreign standards and not BIS standards. The Textile Ministry; however, is advising every manufacturer to get certification from BIS.
- The only assurance for quality is the ISI mark. Look at ISI mark when buying masks.
- At the request of the government, BIS put a condition for the manufacturers that products would be sold to the government first. So, masks with ISI mark may not be available in the open market.
- As of today, there is no legal compliance expected from mask manufacturers; legal compliance (to some extent) starts from 1st October; product compliance gets effective from August 2022.
- Two Indian standards are available for masks: IS 16829:2014 for surgical face mask and IS 9473:2002 for N95 masks in line with the ASTM and BIS standards.
- These standards require the bacteria filtration efficiency, particle filtration efficiency, splash resistance and breathability.
- At present, 56 licenses have been granted from IS 16829. This list is available publicly on BIS website and is updated in real time.
- Coating of masks (with silver nanoemulsion) is not specified as a requirement, but may be given as optional requirement.
- The resistance to inward leakage of surgical masks is poor. Therefore, all frontline workers use N95 and FFP2 masks.
- N95 mask is a 5-layer mask; it has very good resistance to inward leakage.
- The fit of surgical mask and N95 vary greatly.
- BIS is converting respirators to medical respirators. Apart from filtration efficiency and inward leakage, requirement of bacteria filtration efficiency and splash resistance is also being specified.
- There should be a standard for the barrier masks for use by the general public, which provide only breathability and particle filtration efficiency, apart from design and reusability requirements.
- ASTM, AFNOR, Ireland have already brought standards for barrier masks. BIS is working on standards for the barrier mask and will soon bring out a mask for the general public with a caveat that these masks are not suitable for the medical professional.
- A strong redressal mechanism is available online.
- 261 licenses for N95 masks have been granted as on today.
- N99 and FFP3 masks are also now being provided.
- As of today, there are no regulations. In future, CDSCO will be the regulatory authority. States have drug inspectors, etc. If there is any misuse of BIS marks (fake ISI marks), BIS has the power to raid such premises and search. It can also act if somebody who holds a BIS license gives substandard quality.
- Breathability is a prime requirement of masks – it is 29.4 Pascals, which is equivalent to 3 mm of water column.

Participants: Dr Ashok Gupta; Dr Suneela Garg; Dr DR Rai; Mr JK Gupta, BIS; Mr Anil Jauhri, Ex-CEO - NABCB, QCI; Prof Naveeen K Navani, IIT Roorkee; Mr Kapil Punjabi, IIT Mumbai; Dr Anita Chakravarti; Dr Arun Jamkar; Dr KK Kalra; Dr Anil Kumar; Ms Ira Gupta; Ms Priyanka Bapna; Dr S Sharma.

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Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

79th AIOC 2021: All India Ophthalmological Society

UVEITIC CATARACT

Dr Jagat Ram, Chandigarh

- Several factors affect the outcome of uveitic cataract, such as uveitic diagnosis, pre-existing structural damage (cornea, optic nerve and macula), perioperative management of inflammation, surgical technique and management of postoperative complications.
- Preoperative evaluation also involves assessment of visual potential; assess cornea, cataract, optic disc and macula.
- Intraocular lens (IOL) implantation is not contraindicated if there is adequate control of inflammation. Avoid silicon IOLs and anterior chamber intraocular lenses (ACIOLs).
- Juvenile idiopathic arthritis (JIA), pars planitis and chronic diseases (e.g., sarcoidosis) resistant to remission are risk factors for IOL intolerance.
- Factors limiting visual outcomes include glaucoma, hypotony, pupillary membranes and cystoid macular edema.
- Phacoemulsification with in-the-bag implantation of IOL is the procedure of choice for a patient with well-controlled uveitis.
- Preoperative and postoperative control of inflammation is important. Preoperatively, the eye should be quiet for 3 months. Meticulous surgical technique is of utmost importance.

AFTER THE SURGERY – VISUAL REHABILITATION OF PEDIATRIC APHAKIA

Dr Varshini Shanker, New Delhi

- Managing children with congenital cataract is a complex long-term process, which requires considerable input from parents, who are responsible for the occlusion and optical correction and long-term follow-up.
- IOLs are not recommended to be implanted in children <6 months (Infant Aphakia Treatment Study [IATS]).
- Spectacles provide satisfactory correction for bilateral aphakia. But lenses scratch and frames break easily, are difficult to replace due to expense and unavailability and they are not suitable for monocular aphakia.
- Contact lenses are the best optical device in postoperative unilateral and bilateral aphakia. But, there are issues such as noncompliance, difficulty in insertion and removal, expensive, easily lost, poor ocular hygiene, follow-up difficult due to cost and travel distance.
- Foldable IOLs in the sulcus are associated with a high rate of decentration and dislocation.
- About 50% of all children with cataracts develop strabismus. Early onset unilateral cataracts have the highest risk of strabismus.
- Strabismus usually requires surgical management. Children with better vision and binocularity have better stability of ocular alignment.
- Rehabilitation is combined and coordinated use of medical, social, educational and vocational measures for training the individual to the highest level of functional ability.

SUTURELESS SFIOL

Dr Indranil Saha, Sitapur

- Causes of aphakia are trauma (lens absorption, posterior dislocation), surgical aphakia (most common), heritable disorders associated with posterior dislocation of lens such as Marfan's, homocystinuria and congenital absence of lens (rare).
- Complications of aphakia are: High hypermetropia, anisometropia, ring scotoma, loss of protection from UV rays, cystoid macular edema and retinal detachment (RD); risk of amblyopia in pediatric age group.
- Treatment options are refractive correction, in sulcus IOL, ACIOL, iris claw IOL, SFIOL (sutured and sutureless).
- Sutureless: Glued, Yamane's technique, modified Yamane's technique, CMT flex Swiss fold SFIOL.
- Aphakia can be conquered. IOL placement is desirable.
- The best technique is a combined decision between the patient's ocular condition and the surgeon.

RETROPUPILLARY IRIS CLAW IOL: IT'S EASIER THAN IT LOOKS

Dr Karan Bhatia, Sitapur

- Iris claw IOL is a safe and faster backup to manage aphakia.
- Indications include aphakia (surgical, traumatic lens dislocation, congenital disorders like Marfan's), large zonular dialysis.
- Contraindications include acute uveitis, rubeosis iridis, excessive iris chafing posterior segment pathologies like CME, choroidal neovascular membranes (CNVM).
- Iris claw IOL prevents primary aphakia and precludes the need for second or multiple surgeries. It also avoids delayed visual recovery and awkward situation with the patient.
- Advantages of iris claw IOL: It is technically easier, fast, cheaper lens, minimum skill required, easily reproducible, requires minimum instrumentation and no retina backup is required.

THE IMPACT OF THE COVID PANDEMIC ON TRAINING

Prof Bernie Chang; President, RCOphth

- Due to COVID, surgical waiting lists have been adversely affected. In 2021, approximately 3,00,000 patients are 52+ week waiters; around 5 million patients on the waiting list. There are an additional up to 4 million patients who haven't been referred yet.
- In the first wave, the College developed an immediate response to the pandemic. It set up a COVID-19 response team, worked across the NHS organizations and government representatives via the Academy of Royal Colleges, service guidelines with initial focus on urgent care (emergency and sight threatening), recommendations for prioritizing care, guidance on PPE and safe clinical environment and restoration of services, training and research.
- Rethink delivery to reduce need to attend hospitals (use of telephone and virtual technology to conduct appointments), prioritization of ophthalmic procedures, set up alternative care options for patients out of hospital settings, work with local charities to ensure that vulnerable patients are not excluded, communicate effectively with patients, families and carers to avoid DNAs.
- Develop and adopt new safe and efficient ways of working, increased collaboration with optometrists, nurses, health care assistants, orthoptists and Techs (improve training), hope for normality (vaccination programs, continued COVID testing and safety measures – end of overcrowded cities).
- In the RCOphth OTG Survey of trainees in August 2020, 725 felt that they could not complete training objectives; 47% had an exam they planned to sit canceled.
- Less busy clinics: Make every patient count, more time to observe a consultation.
- Trainers and trainees should seize surgery opportunities: Less cases on lists, more time to teach and review surgery/videos, ensure trainees actively watch senior's surgery, discuss surgical techniques, canceled cases use simulation models with supervision.
- Be creative; use all opportunities to train. For this use any appropriate setting (remote/virtual delivery of education and training).

GONIOSCOPY FOR ALL: INCORPORATING GONIOSCOPY IN ROUTINE EXAMINATION

Dr (Col) Madhu Bhadauria, Sitapur

- Gonioscopy is the most neglected test in OPD.
- Glaucoma management is totally dependent on gonioscopy.
- Angle of AC is not visible on slit lamp without aid.
- The mindset that it is time consuming, cumbersome and not essential is a major hurdle in its use.
- Most of the challenges are based due to inability to understand the value of gonioscopy as to how it can help.
- Gonioscopy should be done in all >35 years age, young adults with F/H of glaucoma, H/o trauma, steroids, symptoms suggestive of glaucoma.
- Gonioscopy should be done at first diagnosis in all suspects, pre- and post-PI, every 6 months in stable angle closure, whenever fluctuation/poor control.

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Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

News and Views

Surgical Approach Influences Early Initiation of Post-Surgery Adjuvant Therapy in Colon Cancer

Patients who undergo minimally invasive surgery for stage III colon cancer recover faster and begin their intended adjuvant therapy earlier when compared to patients who undergo open surgery, suggests a new study. The findings were presented at the virtual Society of American Gastrointestinal and Endoscopic Surgeons meeting.

The study analyzed 34,736 patients with third stage colon adenocarcinoma, who had undergone surgical resection and initiated adjuvant chemotherapy. Of these, 16,977 patients underwent open resection of the tumor, while 17,759 underwent minimally invasive surgery (MIS). The study compared the time for return to intended oncological treatment (RIOT) between the two groups.

Results showed that patients in the MIS group started the adjuvant treatment earlier than those in the open surgery group; 6 vs. 7 weeks, respectively. The duration of hospitalization was longer in the open surgery group (6 vs. 5 days, respectively) as was the rate of re-hospitalization at 30 days (4.7% vs. 4.2% days, respectively). In the MIS group, the short-term outcomes and RIOT were comparable between patients who underwent a laparoscopic resection and those who underwent robotic surgery. However, patients who required conversion to open surgery during the minimally invasive procedure showed similar results as those in the open surgery group.

The line of management for locally advanced colonic cancers often involves surgery and adjuvant therapy. Patients are often anxious about any post-surgical delay in starting adjuvant treatment due to prolonged recovery. Recovery is faster after MIS, as demonstrated in this study. These findings may allay their concerns about timing of the adjuvant therapy.

(*Source: Medpage Today*)

Disruptions Due to COVID-19 Causing Several Deaths from TB, AIDS in Poorest Countries

Thousands of people will die due to tuberculosis (TB) left untreated caused by disruptions to healthcare systems in poor nations as a result of the coronavirus disease 2019 (COVID-19) pandemic, stated a global aid fund.

In some of the world's poorest countries, excess deaths from acquired immunodeficiency syndrome (AIDS) and TB might even surpass those from COVID-19 itself, stated the head of the Global Fund. The Fund's annual report for the year 2020 has revealed that the number of individuals treated for drug-resistant TB in the nations where it is operational dropped by 19%. Additionally, there has been a drop of 11% in human immunodeficiency virus (HIV) prevention programs and services. Executive Director Peter Sands stated that around a million fewer people were treated for TB in 2020 compared to 2019 and this would mean that thousands of people will die… (*Source: Reuters*)

New Tool may Accurately Predict Risk of Aneurysm Rupture after Growth

A new prediction model may be able to accurately predict aneurysm rupture within a year after growth is identified on imaging, suggests research published online in *JAMA Neurology*.

Investigators noted that the "triple-S" prediction model evaluates aneurysm size, site and shape, and can serve as a "starting point" to guide treatment and management. Investigators evaluated 312 adult patients with 329 aneurysms that had shown growth of at least 1 mm or more in one direction at follow-up imaging. About 7.6% of the aneurysms ruptured over 864 aneurysm-years of follow-up. The absolute risk for rupture following growth was estimated as 2.9%, 4.3% and 6% at 6 months, 1 year and 2 years, respectively. Multivariable analyses suggested that the predictors of rupture included size ≥7 mm (hazard ratio [HR], 3.1), irregular shape (HR, 2.9), and being located in the middle cerebral artery (HR, 3.6) and the anterior cerebral artery, posterior communicating artery or posterior circulation (HR, 2.8)… (*Source: Medscape*)

Fatigue Most Common Feature of Long COVID

Studies have confirmed that fatigue is the most common feature of long COVID-19, and in a considerable proportion of patients, it is the most stubborn.

Among 239 people from online support groups for long COVID, 85% reported having severe fatigue when a survey was done 11 weeks after symptom onset, reported Maarten Van Herck, a PhD student at the University of Hasselt in the Netherlands, at the European Respiratory

Society's virtual annual meeting. At Week 24, around 79% reported that they had severe fatigue, with 15 of the 35 individuals who reported having mild or no fatigue at Week 11 now indicating that their fatigue was severe. A total of 31 out of 178 individuals reporting severe fatigue initially stated that it had become milder or had disappeared… (*Source: Medpage Today*)

Prioritize Pregnant, Breastfeeding Women for COVID-19 Vaccines: PAHO

The Pan American Health Organization (PAHO) has stated that countries in the Americas should prioritize COVID-19 vaccination for pregnant and lactating women, acknowledging the potential of the vaccines to protect women and their babies.

PAHO Director, Dr Carissa Etienne, said that the agency recommends that all pregnant women after the first trimester, and all breastfeeding women be administered the COVID-19 vaccine. Over 2,70,000 pregnant women have suffered from COVID-19 in the Americas and nearly 1% have died, stated Etienne. She also stated that in Mexico and Colombia, the disease has been the major cause of maternal deaths this year. (*Source: Reuters*)

COVID may not Impair Lung Function in Young Adults: Studies

A study presented at the virtual European Respiratory Society International Congress has suggested that COVID-19 infection may not impair the lung function of children and adolescents.

Researchers also noted that even patients with asthma did not have a statistically significant decline in lung function. However, these patients did show slightly lower measurements for forced expiratory volume in 1 second (FEV1). Another study presented at the conference revealed that the lung function in children and adolescents appeared not to be impaired after COVID-19 infection, except for those who developed a severe infection. Of the 661 young individuals with an average age of 22 years included in the first study, 178 had antibodies against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), suggesting that they had been infected. Investigators assessed the changes in lung function between the period before and during the pandemic and compared the percentage change with participants who had not been infected. The lung function was found to be similar regardless of COVID-19 history. On including the 123 participants with asthma in the analysis, 24% of the patients who had had COVID-19 were found to have a slightly lower lung function, though statistically nonsignificant.

The second study assessed the long-term effects of COVID-19 infection from August 2020 through March 21 in 73 children and adolescents aged 5 to 18 years. It also included 45 children who had not contracted COVID-19 but may have had some other infection. On comparing the COVID-19 patients with the control group, there seemed to be no statistically significant differences in the frequency of abnormal lung function… (*Source: ET Healthworld – PTI*)

Severe Breakthrough COVID-19 Risk Higher for Older Adults and those with Underlying Conditions

For people who are fully vaccinated, the risk of being hospitalized or death due to COVID-19 is low, and way lower than the risk for unvaccinated people. However, in rare cases of a fully vaccinated individual getting infected, older adults and those with several underlying conditions have the highest risk of serious illness, suggest data.

As of August 30, 12,908 severe breakthrough cases of COVID-19 have been reported to the US Centers for Disease Control and Prevention (CDC) among fully vaccinated individuals that led to hospitalization or death. The data suggests a less than a 1 in 13,000 chance of having a severe breakthrough case of COVID-19. The data also suggest that nearly 70% of breakthrough cases resulting in hospitalization were seen in those aged 65 years and older and about 87% of breakthrough cases culminating in death were observed among those 65 years of age and older… (*Source: CNN*)

Gender Gap not Seen in Prevalence of Ankylosing Spondylitis

A study published in *Arthritis Care & Research* refutes the conventional wisdom regarding ankylosing spondylitis (AS) and suggests that there appears to be no gender gap in the prevalence of the disease.

Researchers noted that there was no statistically significant difference in the rates between men and women according to an analysis of military medical records. Researchers retrospectively tracked 7,28,556 members of the US military who had been subjected to guideline-directed screening for back pain during 2014 to 2017. About 85% of the study population was male. The subjects were assessed for a mean of 2.21 years, and 0.06% were diagnosed with AS at least once during this period. The rates of AS among males vs. females were found to be similar (incidence rate ratio, 1.16; adjusted odds ratio [OR], 0.79; 95% confidence interval [CI], 0.61-1.02; p = 0.072)… (*Source: Medscape*)

FDA Safety Alert for JAK Inhibitors

The US Food and Drug Administration (FDA) has cautioned about the increased risk of serious cardiovascular events such as myocardial infarction or stroke, including a higher risk of cancer, blood clots and death with tofacitinib and other Janus kinase (JAK) inhibitors like baricitinib and upadacitinib.

The approved indications have now been limited to patients who have not responded or cannot tolerate one or more tumor necrosis factor (TNF) blockers.

According to the FDA, safety of baricitinib and upadacitinib has not been evaluated in large-scale trials, but as they share their mechanisms of action with tofacitinib, they may also have similar risks as seen in the tofacitinib safety trial.

All the aforementioned JAK inhibitors are approved to treat patients with rheumatoid arthritis. Tofacitinib is also indicated for use in psoriatic arthritis, ulcerative colitis and polyarticular course juvenile idiopathic arthritis.

However, the FDA has said that these required updates to the prescribing information do not apply to ruxolitinib and fedratinib, which are used to treat blood disorders like myelofibrosis.

(*Source: US FDA Drug Safety Communication & MedPage Today*)

Two Doses of COVID-19 Vaccine 97.5% Effective in Preventing COVID Mortality: ICMR

The COVID-19 vaccines available in India are nearly 97% effective in preventing mortality due to the illness, while vaccination also decreases hospitalization significantly, suggests the assessment of real time vaccination data from the COVID vaccine tracker.

Analysis of the data indicates that one dose of COVID-19 vaccine is 96.6% effective in preventing death, while two doses are 97.5% effective, stated Director General of the Indian Council of Medical Research (ICMR), Dr Balram Bhargava.

The data has been evaluated for the period from April to August and does not differentiate between the different COVID vaccines being administered in the country, stated Dr Bhargava. This tracker also provides data to monitor re-infections and breakthrough infections and combines data from Co-WIN, the national COVID-19 testing database and the COVID-19 India portal of the Health Ministry… (*Source: ET Healthworld – TNN*)

GBS Listed as Very Rare Side Effect of AstraZeneca COVID-19 Vaccine

The European Medicines Agency (EMA) has listed Guillain-Barré syndrome (GBS), a neurological disorder known to cause temporary paralysis, as a very rare side effect of AstraZeneca COVID-19 vaccine.

With 833 cases of GBS reported worldwide as of July 31, from around 592 million doses of the AstraZeneca "Vaxzevria" vaccine administered, the EMA stated that a causal relationship was "considered at least a reasonable possibility".

The EMA said that GBS should be added to the product information as a side effect of the vaccine, and stated that the syndrome was a very rare side effect, noted in less than one in 10,000 individuals… (*Source: NDTV – AFP*)

Ivermectin does not Reduce Viral Load in COVID-19 Patients: AIIMS Study

A randomized controlled trial conducted among 157 patients admitted with mild-to-moderate COVID-19 at the All India Institute of Medical Sciences (AIIMS) revealed that ivermectin did not reduce the viral load or duration of symptoms in the patients, even at higher doses.

The trial was conducted during the first surge between July and September, 2020, and has been published in the *Journal of Infection and Chemotherapy*. The study participants were divided into three groups – one received 12 mg ivermectin (dosage usually prescribed by doctors), the second group was given 24 mg of ivermectin and the third group received a placebo. The proportion of patients testing reverse transcription-polymerase chain reaction (RT-PCR) negative on Day 5 was found to be higher among the patients in the high-dose ivermectin arm as compared to those who received lower dose of the drug or placebo; however, it was not significantly high (47.5% vs. 35% among those who were given lower dose of ivermectin vs. 31.1% in the placebo group)… (*Source: HT*)

New ESC/EACTS Valvular Heart Disease Guidelines Issued

New guidelines for the management of valvular heart disease introduce over 45 revised or new recommendations to the previous version published in 2017, revealed members of the writing committee presenting the updated guidelines during the annual congress of the European Society of Cardiology (ESC).

The guidelines emphasize on early diagnosis and expansion of indications, the significance of clinical

examination as well as the best strategies for diagnosis and treatment. The highest number of revisions and new additions involve perioperative antithrombotic therapy. A total of 11 new recommendations on the use of anticoagulants or antiplatelet treatment have been included. The next major focus of the guidelines involves when to consider surgical aortic valve repair (SAVR) relative to transcatheter aortic valve implantation (TAVI) in patients with severe aortic stenosis… (*Source: Medscape*)

People not Vaccinated against COVID 11 Times More Likely to Die from the Disease

According to a study published by the US CDC, unvaccinated individuals were found to be 11 times more likely to die due to COVID-19 and were 10 times more likely to require hospital admission. Researchers assessed 6,00,000 COVID-19 cases across 13 states between April and mid-July. CDC Director, Dr Rochelle Walensky, said that people who were not vaccinated against COVID-19 had about four and a half times higher likelihood of getting the infection. Dr Walensky added that vaccination works and can protect people from the severe complications of COVID-19.

Meanwhile, US President, Joe Biden outlined a plan to impose strict new vaccine rules on federal workers, large employers and healthcare staff… (*Source: CNN*)

No Trace of Coronavirus in Ganga Water: Study

No traces of coronavirus have been detected in the Ganga water after bodies of COVID-19 victims were recovered in Buxar, Katihar and certain districts in Uttar Pradesh, reported a recent study by the National Mission for Clean Ganga under the Union Jal Shakti Ministry, conducted in association with the Indian Institute of Toxicology Research (IITR), Lucknow, the Central Pollution Control Board (CPCB) and the Bihar State Pollution Control Board (BSPCB).

Ashok Ghosh, Chairman of BSPCB, stated that the samples of water were collected after the bodies of COVID-19 victims were found floating in the Ganga river during the second COVID wave peak in May and June. None of the samples tested were found to have any traces of SARS-CoV-2 virus, thus suggesting that the water was not contaminated by the bodies of COVID victims… (*Source: TOI – TNN*)

COVID-19 Associated with Increase in Suicide-related ED Visits among Young Individuals

Following a drop in the initial months of the COVID-19 pandemic, the number of young individuals with suicidal thoughts and behaviors visiting an emergency department (ED) showed resurgence, stated a cross-sectional study conducted at Kaiser Permanente Northern California. The results are in line with CDC data published a few months back in the *Morbidity and Mortality Weekly Report* that evaluated these trends in young people aged between 12 and 25 years prior to and during the pandemic. The new data, published in *JAMA Psychiatry*, suggest that efforts aimed at prevention might help these young people and their families.

Investigators assessed suicide-related ED visits among children, 5 to 17 years of age, presenting to EDs in the Kaiser Permanente Northern California system and compared four periods in 2020 with the same periods in 2019. From March to May 2020, the incidence rate ratio (IRR) of suicide-related ED visits among children and adolescents was found to drop by over 40% (IRR, 0.53) compared to the same months in 2019. From June through August and September to December 15, suicide-related ED visits escalated, reaching prepandemic levels, though there were differences between genders. Among girls, an increase in the first period was significant (IRR, 1.19) and rose even higher in the second period (HR, 1.22)… (*Source: Medscape*)

COVID-19 Vaccines Offer Strong Protection against Delta Variant; Protection may Wane in Older Adults

Three studies in the United States have suggested that COVID-19 vaccines offer strong protection against hospitalization and death, even amid the spread of the highly transmissible Delta variant. However, the protection extended by the vaccines seems to be waning among older individuals, particularly among those aged 75 years and older.

Data on hospital admissions from nine states during the period when the Delta variant was dominating also indicated that the Moderna vaccine was comparatively more effective at preventing hospitalizations among individuals of all ages compared to the Pfizer/BioNTech or Johnson & Johnson (J&J) COVID-19 vaccines. In that study involving over 32,000 visits to urgent care centers, emergency rooms and hospitals, the Moderna vaccine was found to be 95% effective at preventing hospitalization, while the Pfizer vaccine was 80% effective and the J&J vaccine was 60% effective… (*Source: Reuters*)

Peanuts may Reduce Cardiovascular Disease Risk: Study

A new study, published in the journal *Stroke*, has suggested that Asian men and women living in

Japan who consumed an average of 4-5 peanuts/day had a lower risk of having an ischemic stroke or a cardiovascular disease event in comparison with those who did not consume peanuts.

Researchers assessed the association between peanut consumption and the incidence of different types of stroke - ischemic and hemorrhagic - as well as cardiovascular disease events (such as stroke and ischemic heart disease) among Japanese people. Compared to a diet without peanuts, intake of about 4-5 unshelled peanuts/day was found to be tied to 20% lower risk of ischemic stroke, 16% lower risk of total stroke and 13% lower risk of cardiovascular disease (both stroke and ischemic heart disease)… (*Source: ET Healthworld – ANI*)

Regular Exercise may Decrease Risk of Developing Anxiety

According to a new study, individuals who engage in regular physical activity may have around 60% lower risk of developing anxiety.

Researchers in Sweden demonstrated that people who participated in the world's largest long-distance cross-country ski race between 1989 and 2010 were found to have a significantly lower risk of developing anxiety, when compared with those who did not ski during the same period.

The study includes data from around 4,00,000 individuals in one of the largest epidemiological studies. Among individuals with a more physically active lifestyle, the risk of developing anxiety disorders was lower by around 60% over a follow-up period of up to 21 years, stated researchers. The findings are published in *Frontiers in Psychiatry*… (*Source: HT – ANI*)

New-onset Bladder Symptoms in COVID-19 Patients Discharged from Hospital

A case series presented at the American Urological Association (AUA) 2021 Annual Meeting indicated that new-onset bladder symptoms can impact men and women who have been admitted to a hospital for COVID-19.

Investigators compared 53 patients who were discharged in recent weeks after a COVID-19 hospital admission and had reported new-onset urinary symptoms (average age of 65 years), with 12 asymptomatic subjects (controls). A large proportion of subjects reporting bladder symptoms had no evidence of SARS-CoV-2 in their urine. Luminex assays revealed that the levels of inflammatory cytokines, such as growth-regulated oncogene-alpha, interleukin-6, interferon-gamma-inducible protein 10 and C-reactive protein, were significantly increased in urine samples from COVID-19 patients, particularly those with COVID-19 associate cystitis, compared to control subjects… (*Source: Medscape*)

Cancer Patients with COVID-19 have Long-term Effects: Study

A study in Europe has noted that nearly 15% of cancer patients who developed COVID-19 reported having long-term effects from the infection that had an adverse impact on their cancer outcomes.

At a median follow-up of 128 days, these patients had persistent respiratory symptoms, chronic fatigue, weight loss and neurocognitive issues. A multivariable analysis adjusted for sex, age, comorbidities, tumor characteristics, anti-cancer therapy and COVID-19 severity, revealed that the long-term sequelae were tied to a heightened risk of death (HR 1.76, 95% CI 1.16-2.66). In the study, around 15% of the patients reported at least one sequelae, which included respiratory symptoms in about 49.6% of patients, followed by fatigue in 41%, neurocognitive dysfunction in 7.3% and weight loss in around 5.5%. It was more likely for these patients to be male, above 65 years of age, to have at least two comorbidities or a history of smoking and to have COVID-19 that needed treatment or hospitalization… (*Source: Medpage Today*)

School Closures During Pandemic Associated with Mental Health Inequities

A new study published in *JAMA Network Open* has suggested that virtual schooling during 2020 was tied to worse mental health outcomes for students, particularly those who are older, and youth from Black, Hispanic or lower-income families were the most affected as they witnessed the most closures.

A cross-sectional population-based survey involving 2,324 parents of school-age children in the United States was conducted from December 2 to 21, 2020. Investigators employed the parent-report version of the Strengths and Difficulties Questionnaire (SDQ) to evaluate mental health difficulties of one child per family in terms of emotional problems, peer problems, conduct and hyperactivity. During the 2020 school year, 58% of children attended school remotely, 24% attended the school fully in person, while 18% attended in a hybrid manner. Older children who underwent remote schooling were found to have more difficulties, compared to those who attended the school in person. Among younger children, remote learning appeared to

be comparable or slightly better with regard to mental health… (*Source: Medscape*)

Plant-based Diet and Urological Health in Men

Studies presented at the American Urological Society (AUA) virtual meeting have suggested that plant-based diets are tied to a decreased risk of erectile dysfunction (ED), lower prostate-specific antigen (PSA) rates, and probably a reduced rate of total and fatal prostate cancer among younger men.

In a cohort of 1,399 men, investigators noted that those with a higher consumption of healthy plant-based diet (high PDI scores) had reduced odds of having raised PSA (OR 0.47, 95% CI 0.24-0.95). In another study that evaluated 2,549 men from the NHANES database - 57.4% of them having some degree of ED - increasing the intake of plant-based foods was tied to a decreased risk of ED.

Another prospective study included 27,243 men, followed up to 28 years, in the Health Follow-up study, and noted that among men aged ≤65 years at diagnosis, higher intake of plant-based food was linked with a lower risk of advanced prostate cancer (HR 0.68, 95% CI 0.42-1.10). Additionally, among younger men, higher intake of a healthy plant-based diet was associated with lower risks of total prostate cancer (HR 0.81 95% CI 0.70-0.95), as well as fatal disease (HR 0.53, 95% CI 0.32-0.90)… (*Source: Medpage Today*)

Revolutionizing Cancer Diagnosis: The NHS-Galleri Trial Launched

The National Health Service (NHS) has launched the NHS-Galleri trial of a new blood test "Galleri test" that can detect several types of cancers, especially those of the head and neck, throat, bowel, lung and pancreas, before they become symptomatic. In addition, it can detect deadly cancers and predict the location of the cancer in the body with high accuracy and has a very low false positivity rate. The chemical changes in fragments of genetic code-cell-free DNA (cfDNA) of the tumors are picked up by the test.

The randomized-controlled NHS-Galleri trial will recruit 1,40,000 participants, aged between 50 and 77 years, in eight areas of England. Their blood samples would be collected at baseline, at 12 months and at 2 years. Participants who have been diagnosed with cancer in the last 3 years will be excluded from the trial.

Detection of potential signals of cancer in the blood sample of a participant would merit referral to NHS hospital for further investigation. The participants would be required to consult their GP if they develop any new or unusual symptoms and also comply with the NHS screening schedules. Preliminary results are likely to be released by the year 2023. The trial would recruit 1 million more participants in 2024 and 2025, if the preliminary results are encouraging.

The Cancer Research UK and King's College London Cancer Prevention Trials Unit have collaborated with the NHS and GRAIL, the healthcare company, which has developed this test.

(*Source: NHS News & King's College London, Sept. 13, 2021*)

In a Review, Scientists State Boosters not Needed for Most People

In a review published in *The Lancet* by an international group of scientists, including from the FDA and the WHO, the scientists state that none of the data available on COVID-19 vaccines thus far provides reliable evidence to support booster doses for the general population.

The scientists stated that the advantage that the boosters provide would not outweigh the benefit of offering those doses to protect the people who are still unvaccinated globally. While boosters may be useful in some individuals who have weak immune systems, they are not required for the general population. Lead author Ana-Maria Henao-Restrepo, of the WHO, stated that studies do not provide any reliable evidence of a considerable decline in protection against severe disease, which is the main aim of vaccination, adding that if the vaccines are put to use where they would be most beneficial, then they could speed up the end of the pandemic by curbing the development of variants… (*Source: ET Healthworld*)

Antipsychotic Drugs Linked to Increased Risk of Breast Cancer

Antipsychotic drugs that increase prolactin levels have been shown to have a significant association with a heightened risk for breast cancer among women with schizophrenia in a new research. However, one expert states that currently, the clinical implications seem premature.

Data from Finnish nationwide registers on over 30,000 women with schizophrenia was compared. A total of 1,069 of these were diagnosed with breast cancer. Long-term exposure to the prolactin-increasing antipsychotic agents was tied to a 56% increase in the risk of developing breast cancer compared to short-term exposure.

There appeared to be no significant association with cumulative exposure to prolactin-sparing antipsychotic drugs. The findings are published in *The Lancet*… (*Source: Medscape*)

Gluten-free Diet may Decrease Cancer Risk in Celiac Disease Patients

The overall risk for cancer is slightly increased among patients aged above 40 within their first year of a celiac disease diagnosis; however, the risk decline afterwards, suggests a study of around 47,000 individuals with celiac disease.

First author Benjamin Lebwohl said that celiac disease is tied to a heightened risk of cancer, and this could be due to the long-term inflammation caused by gluten. The nationwide cohort study conducted in Sweden included 47,241 patients with celiac disease. Of these, 64% were diagnosed since 2000. Each patient was age- and sex-matched to up to five control subjects. There was a 1.11-times increased risk of cancer overall, after a median follow-up of 11.5 years, in patients with celiac disease, in comparison with controls. The incidences of cancer were 6.5 and 5.7, respectively, per 1,000 person-years. Most of the excess risk was attributed to gastrointestinal and hematologic cancer. The overall risk increased in the first year following the diagnosis of celiac disease (HR, 2.47; 95% CI, 2.22-2.74), but not after that (HR, 1.01; 95% CI, 0.97-1.05). According to Lebwohl, it seems that the increased risk of cancer in celiac disease patients decreased over time, and this might be tied to the beneficial effect of a gluten-free diet in the long run. The study is published in *Clinical Gastroenterology and Hepatology*… (*Source: Medscape*)

Britain to Test Mixed COVID-19 Vaccine Dose Schedules in Kids

A British study is going to assess the immune responses to mixed COVID-19 vaccine dose schedules among children in a bid to ascertain the best approach to a second dose, considering a minor risk of heart inflammation.

Children in the age group of 12 to 15 years will start getting vaccinated in Britain from next week, while 16- and 17-year old have been eligible since August. The children will be offered a first dose of the Pfizer-BioNTech vaccine; however, the advice on the second doses will come later, as more data is accumulated.

The Com-COV3 study will evaluate different vaccine schedules in children aged between 12 and 16 years, and assess the immune responses as well as the milder side effects… (*Source: Reuters*)

Indian Women's Healthy Life Expectancy Lowest in South East Asia

Women in India can expect to live just over 60 years of a healthy life, on average, not affected by disabling illness or injuries. This is the lowest healthy life expectancy among the 11 countries in the World Health Organization's (WHO) South East Asia region, reveals a WHO report on progress in attaining universal health coverage and health-related sustainable development goals in the region.

For men too, only two countries in the region, Timor-Leste and Myanmar, are worse in terms of healthy life expectancy. Countries with the best performance in the region include Sri Lanka, Thailand and Maldives. The health spending in these countries, as a share of total government expenditure, is one of the highest in the region. The estimated share of health expenditure in total government expenditure is the lowest in India, Bangladesh and Myanmar… (*Source: ET Healthworld – TNN*)

New Typhoid Vaccine Found Highly Effective

A major trial conducted in Africa's Malawi has shown that a new vaccine against typhoid fever in young children was highly effective.

An intention-to-treat analysis demonstrated that the vaccine was 80.7% effective (95% CI 64.2-89.6%), with fewer adverse events compared to a standard meningococcal A (MenA) vaccine used as a control, reported researchers in the *New England Journal of Medicine*. Around 28,000 children, 9 months to 12 years of age, were included in the trial, and were assigned in almost equal numbers to the MenA vaccine or to the Vi-TCV typhoid vaccine (a conjugated product that combines tetanus toxoid and a *Salmonella enterica* Typhi polysaccharide). Of 14,069 children who received Ti-TCV, 12 developed typhoid infection, compared to 62 of those who were given MenA, during passive surveillance for 18 months or more. Infection rates were 46.9 per 1,00,000 person-years for Ti-TCV compared to 243.2 for MenA… (*Source: Medpage Today*)

Nonopioid Pain Medication Seems Promising for Neuropathic Pain

Findings from a phase 2, placebo-controlled, double-blind, randomized withdrawal study - CONVEY -suggest that vixotrigine, a nonopioid investigational oral pain medication, can decrease chronic neuropathic pain due to small fiber neuropathy (SFN). The drug is generally well-tolerated.

The study included 265 patients with pain due to confirmed idiopathic or diabetes-associated SFN. After a 4-week open-label run-in period, 123 subjects - responders to vixotrigine - were randomized to receive 200 mg or 350 mg vixotrigine or placebo twice a day for a duration of 12 weeks. At Week 12, the 200-mg dose met the primary endpoint of a statistically significant reduction in the mean average daily pain (ADP) score compared to placebo (p = 0.0501). In a subgroup analysis, a treatment effect was noted in participants with diabetes-associated SFN but not in those with idiopathic SFN. Additionally, there was a significant improvement in mean worst daily pain score at 12 weeks with the 200-mg dose, compared to placebo (p = 0.0455)… (*Source: Medscape*)

FDA Advisers Recommend COVID Booster Shots for People 65 and Older and Those at High Risk

Advisers to the US FDA have voted to recommend COVID-19 vaccine boosters for people in the US aged 65 years and above as well as those who are at high risk of severe illness. The advisers rejected a broader approval.

They also recommended inclusion of healthcare workers and others at high risk due to occupational exposure to the virus, like teachers. So, in spite of the tapered scope of the authorization, the recommendation would still cover most Americans who received their vaccines in the initial stages of the vaccination drive. The FDA will likely take a decision on the booster shots soon. While the agency is not bound by the recommendation of the advisers, it will take it into consideration… (*Source: Reuters*)

Pfizer Vaccine Booster Dose can Reduce Severe Infections in Elderly, Says Study

A study done in Israel has shown that a booster dose of the Pfizer COVID-19 vaccine is able to prevent infections and severe illness in individuals aged above 60 years shortly after the jab.

The rates of confirmed COVID-19 and severe illness were found to be considerably lower among those who were administered a booster dose of the vaccine. Researchers accumulated data between July 30 and August 31 from the Ministry of Health database on 1,137,804 individuals aged 60 years or older who had been fully vaccinated at least 5 months earlier. At least 12 days following the booster dose, the rate of infection was found to be 11-times lower and the rate of severe disease was around 20-times lower in people who were given a booster shot, compared to those who had received only two vaccine doses. The findings are published in the *New England Journal of Medicine*… (*Source: ET Healthworld – IANS*)

Moderna COVID-19 Vaccine Protection vs. Pfizer and J&J: CDC Study

According to a case-control analysis which included data from 21 hospitals in the United States, the two-dose Pfizer and Moderna vaccines offered the best protection for preventing COVID-19–related hospital admissions.

Between March and August 2021, the vaccine effectiveness (VE) against hospitalizations was found to be 93% for the Moderna vaccine, 88% for the Pfizer jab and 71% for the Johnson & Johnson (J&J) shot, noted researchers. However, after 120 days, VE for Moderna jab against hospitalization dropped only to 92%, representing a nonsignificant decline, while Pfizer COVID-19 vaccine VE came down to 77%. There were no data for the J&J vaccine after 120 days as only a limited number of people received the vaccine, though the VE rate dropped to 68% for the vaccine after 28 days. The results are published in the *Morbidity and Mortality Weekly Report*… (*Source: Medpage Today*)

Endoscopic Surveillance and Management of Colorectal Dysplasia in IBD: AGA Expert Review and Clinical Practice Update

An expert review and clinical practice update has recently been published by the American Gastroenterological Association which addresses endoscopic surveillance and management of colorectal dysplasia in inflammatory bowel disease (IBD) patients.

Improvements in disease management and endoscopic technology and quality have modified the conceptualization and management of IBD-related dysplasia over the past 2 decades, wrote the authors in *Gastroenterology*. Fourteen best practice advice statements in the review cover an array of topics, including lesion terminology and characterization, timing of endoscopy, and indications for biopsies, resection, and colectomy.

The authors stated that all patients with chronic IBD must be subjected to colonoscopy screening for dysplasia 8 to 10 years following diagnosis. Further colonoscopies should be done every 1 to 5 years, based on the risk factors, like a family history of colorectal cancer and the quality of previous surveillance exams… (*Source: Medscape*)

■■■■

Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

Direct All Your Energy Towards the Soul and not the Ego

The epic Mahabharata can also be understood as the science of inner Mahabharata that occurs in everybody's mind.

Lord Krishna symbolizes the consciousness and the five Pandavas, the five positive qualities of a person namely, righteousness (Yudhishthir), focus (Arjuna), power to fight injustice (Bheem), helping others (Sahadev) and learning to be neutral in difficult situations (Nakul). Panchali indicates the five senses, which can only be controlled when these five forces are together.

Dhritarashtra symbolizes ignorance, Duhshasan - a negative ruling quality (dusht while ruling), and Duryodhana (dusht in yudh) symbolizes one who is not balanced in war.

Consciousness-based decisions need to be taken to kill the negativity in the mind. Every action, if directed towards the consciousness or the soul, is the right action. To kill all the 100 Kauravas (the 100 negative tendencies a person can have) controlled by Duryodhan and Dushasan along with Shakuni (the negative power of cunningness), positive qualities have to be redirected towards consciousness and then take right decisions.

The five Pandavas (positive qualities) made soul (Lord Krishna) as their point of reference (Sarathi) and won over the evils (Kauravas).

Bhishma Pitamah, Karna and Dronacharya, individually all had winning powers, but, they all supported negative thoughts and made Duryodhana as their point of reference and ultimately had to die.

The message is very clear - if one directs his or her positive powers towards ego as the reference point, in the long run, they will be of no use and, in fact, will be responsible for one's destruction.

Ravana too was a great scholar but he directed all his energies and powers towards his ego and ended up in misery.

Therefore, one should cultivate a positive mental attitude and positive thoughts, and instead of directing them towards desire, attachment or ego, they should direct them to soul/consciousness for a positive outcome.

■■■■

COVID-19 Pandemic Impacted Home Life of 67% of Female Physicians Having Children

According to a survey, the COVID-19 pandemic has been found to disrupt the home life of female primary care doctors who had children more than it disrupted the life of those who did not have kids. The survey was conducted by the Robert Graham Center and the American Board of Family Medicine between May and June last year and looked into the professional and personal experiences of being a primary care physician and a mother during the pandemic. A total of 89 female physicians working in the primary care specialty were included in the survey. Around 67% of them with children stated that the pandemic had a huge impact on their home life compared to 25% of those without children. Around 41% of those with children said that COVID-19 had a considerable impact on their work life, compared to 17% of those without children. The findings are reported in the *Journal of Mother Studies…* (*Source: Medscape*)

More Severe Congenital Heart Disease Associated with Lower IQ in Children

Congenital heart disease (CHD) has a known association with cognitive impairment in children. A meta-analysis involving 74 studies has shown that more severe CHD can lead to worse neurocognitive outcomes. Among 3,645 children with CHD, the overall estimate of total IQ was 96.03. Children having hypoplastic left heart syndrome (HLHS) and univentricular heart disease (UVH) were noted to have significantly lower mean IQ scores (HLHS - 88.47 and UVH - 92.65). Those with milder subtypes of CHD, including atrial septum defect (ASD) or ventricular septum defect (VSD), had a mean IQ of 98.51. The IQ deficit in children with CHD was more marked when compared with their healthy counterparts, with a mean difference of -9.9 points. The findings are published in the journal *Pediatrics…* (*Source: Medpage Today*)

Indian Journal of Clinical Practice, Vol. 32, No. 5, October 2021

Win-Win Situation

Once, a great mathematician lived in a village outside Ujjain. The king often sought his advice on matters related to the economy. He was known as far as Taxila in the North and Kanchi in the South. However, it hurt him when the village headman told him that he was a great mathematician who advised the king on economic matters but his son did not even know the value of gold or silver. The mathematician called his son and asked him which of the two is more valuable - gold or silver? The son said gold. His answer was correct. The mathematician asked his son as to why the village headman mode fun of him and claimed that he did not know the value of gold or silver.

He told him that the village headman teased him every day and mocked him before other village elders that he neglects his son. He felt that everyone in the village laughed behind his back because his son did not know what is more valuable, gold or silver. He asked his son to explain this.

The son then told his father, the reason why the village headman carried this impression. He told him that every day, on his way to school, the village headman calls him to his house. In front of all the elders of the village, he brings out a silver coin in one hand and a gold coin in the other.

He asks the boy to pick up the more valuable coin. The son told the mathematician that he picks the silver coin. Then everyone makes fun of him and he goes to school. This happens on a daily basis. That is why, they tell the mathematician that his son does not know the value of gold or silver.

The father was confused and asked his son that despite knowing the value of gold and silver, why did he always pick the silver coin. He took his father to his room and showed him a box. The box contained at least a hundred silver coins. He said that the day he will pick up the gold coin, the game will end, they will stop having fun and he will stop making money.

Moral - Sometimes i n life, we have to play the fool's role because our seniors and our peers like it. That does not mean we lose. It just means that others win in one arena of the game, while we win in the other arena. We have to choose which arena matters to us.

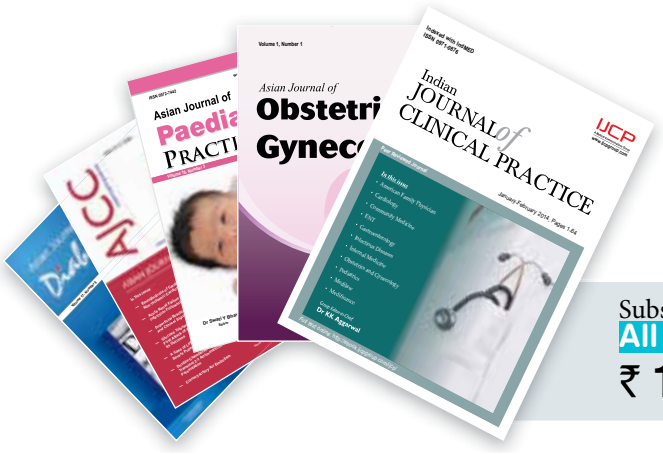
■■■■

Ninety-nine Percent have Antibodies 6 Months after Second Dose of Covishield: Study

A study by Sri Jayadeva Institute of Cardiovascular Sciences and Research has noted that the COVID-19 antibodies were intact in 99% of the cohort, 6 months following the second dose of Covishield vaccine. Director of the institute, Dr CN Manjunath, said that among 250 fully vaccinated healthcare workers, 99% of them were found to have intact antibodies against COVID-19. He added that the findings indicate that booster doses are not needed at present. Blood tests for the IgG neutralizing antibody were conducted on 250 healthcare workers at the hospital. All the participants had received their second dose of Covishield in February 2021. When tested for antibodies in April, 79% had a positive antibody response, while 21% exhibited a negative immune response. When tested in September, 99% of the cohort exhibited a positive immune response while only 1% had a negative immune response. Around 49% of the cohort had over 90% antibody levels… (*Source: ET Healthworld – TNN*)

Delirium Common after Hospitalization for Severe COVID-19, Finds Study

Patients with COVID-19 usually had an extended course of delirium in the intensive care unit (ICU), likely with several contributing factors, suggests a new study. The researchers also noted that neuropsychological impairment may continue after discharge from the hospital. Investigators assessed the medical records of 148 patients admitted to a Michigan Medicine ICU from March 1 through May 31, 2020. Telephone surveys were then conducted between 1 and 2 months following discharge to evaluate the neuropsychological function. Delirium was noted in 73% of the patients, with median duration of 10 (interquartile range 4-17) days. In the delirium cohort, majority of the delirious patients were female (70%). Delirium was reported to be tied to prolonged hospitalization, increased duration of ICU stay, discharge to skilled care facilities and positive screening for neuropsychological impairment during the months following discharge, stated the authors. The findings are published in *BMJ Open*… (*Source: DG Alerts*)



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Lighter Side of Medicine

HUMOR

A NICE BOY?

One night a teenage girl brought her boyfriend home to meet her parents. They were astonished by his appearance: leather jacket, motorcycle boots, tattoos and pierced nose.

The parents pulled their daughter aside and expressed their concern. Her mother said that the boy didn't seem very nice.

Agitated, the daughter replied, "if he wasn't nice, why would he be doing 400 hours of community service?"

TELL HIM I CAN'T SEE HIM

While the doctor was talking to a patient, his nurse came in and said,

"Doctor, there is a man who thinks he's invisible."

The doctor said, "Tell him I can't see him."

COMPUTER POWER

The businessman reached home exhausted and barely made it to his chair.

His wife brought a tall cool drink.

She said to her husband that he must have had a hard day.

"It was terrible," he replied, "The computer broke down and all of us had to do our own thinking."

HOW DO YOU START A FLOOD?

A doctor had just bought a villa on the French Riviera. He met an old lawyer friend whom he hadn't seen in years, and they started talking. The lawyer owned a nearby villa. They discussed how they came to stay at the Riviera. The lawyer said that the office complex he had bought caught fire, and he retired to the Riviera with the fire insurance proceeds. He asked his doctor friend what he was doing there.

The doctor replied that he had bought real estate in Mississippi. The river overflowed, and he reached there with the flood insurance proceeds.

The lawyer looking puzzled, asked – "How do you start a flood?"

DOCTOR, DOCTOR HAVE YOU GOT SOMETHING FOR A BAD HEADACHE?

Doc: Of course. Just take this hammer and smash yourself in the head.

Then you'll have a bad headache.

NEW TEETH

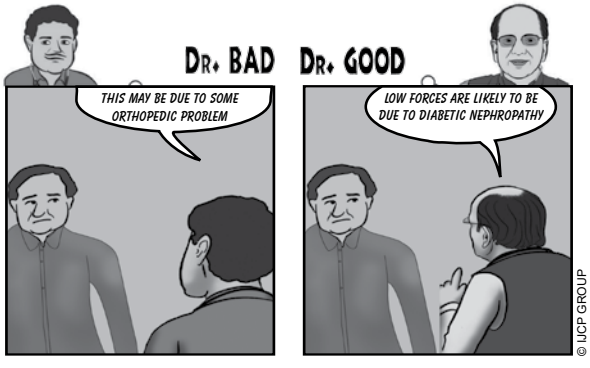
A local minister had all of his remaining teeth pulled and new dentures made a few weeks ago.

The first Sunday, his sermon lasted 10 minutes. The second Sunday, it lasted for 20 minutes. But, on the third Sunday, he preached for an hour and a half.

A man asked him about this. He said that on the first Sunday, his gums were so sore it hurt to talk. The second Sunday, his dentures were still hurting a lot. The third Sunday, he accidentally grabbed his wife's dentures and he just couldn't stop talking.

Dr. Good and Dr. Bad

SITUATION: A 64-year-old male with type 2 diabetes and nephropathy since the past 7 years had lower toe pinch force and knee extension force.



LESSON: Research has shown that in male patients with diabetic nephropathy, the toe pinch force and knee extension force reduce with the progression of diabetic nephropathy.

Clin Exp Nephrol. 2018;22(3):647-52.

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- These should be described in sufficient detail to permit evaluation and duplication of the work by others.
- Ethical guidelines followed by the investigations should be described.

Statistics

The following information should be given:

- The statistical universe i.e., the population from which the sample for the study is selected.
- Method of selecting the sample (cases, subjects, etc. from the statistical universe).
- Method of allocating the subjects into different groups.
- Statistical methods used for presentation and analysis of data i.e., in terms of mean and standard deviation values or percentages and statistical tests such as Student's 't' test, Chi-square test and analysis of variance or non-parametric tests and multivariate techniques.
- Confidence intervals for the measurements should be provided wherever appropriate.

Results

- These should be concise and include only the tables and figures necessary to enhance the understanding of the text.

Discussion

– This should consist of a review of the literature and relate the major findings of the article to other publications on the subject. The particular relevance of the results to healthcare in India should be stressed, e.g., practicality and cost.

References

These should conform to the Vancouver style. References should be numbered in the order in which they appear in the texts and these numbers should be inserted above the lines on each occasion the author is cited (Sinha[12] confirmed other reports[13,14]...). References cited only in tables or in legends to figures should be numbered in the text of the particular table or illustration. Include among the references papers accepted but not yet published; designate the journal and add 'in press' (in parentheses). Information from manuscripts submitted but not yet accepted should be cited in the text as 'unpublished observations' (in parentheses). At the end of the article the full list of references should include the names of all authors if there are fewer than seven or if there are more, the first six followed by et al., the full title of the journal article or book chapters; the title of journals abbreviated according to the style of the Index Medicus and the first and final page numbers of the article or chapter. The authors should check that the references are accurate. If they are not this may result in the rejection of an otherwise adequate contribution.
Examples of common forms of references are:

Articles

Paintal AS. Impulses in vagal afferent fibres from specific pulmonary deflation receptors. The response of those receptors to phenylguanide, potato S-hydroxytryptamine and their role in respiratory and cardiovascular reflexes. Q. J. Expt. Physiol. 1955;40:89-111.

Books

Stansfield AG. Lymph Node Biopsy Interpretation Churchill Livingstone, New York 1985.

Articles in Books

Strong MS. Recurrent respiratory papillomatosis. In: Scott Brown's Otolaryngology. Paediatric Otolaryngology Evans JNG (Ed.), Butterworths, London 1987;6:466-470.

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– These should be typed double spaced on separate sheets with the table number (in Roman Arabic numerals) and title above the table and explanatory notes below the table.

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– The legend must include enough information to permit interpretation of the figure without reference to the text.

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– The back of each illustration should bear the first author's last name, figure number and an arrow indicating the top. This should be written lightly in pencil only. Please do not use a hard pencil, ball point or felt pen.

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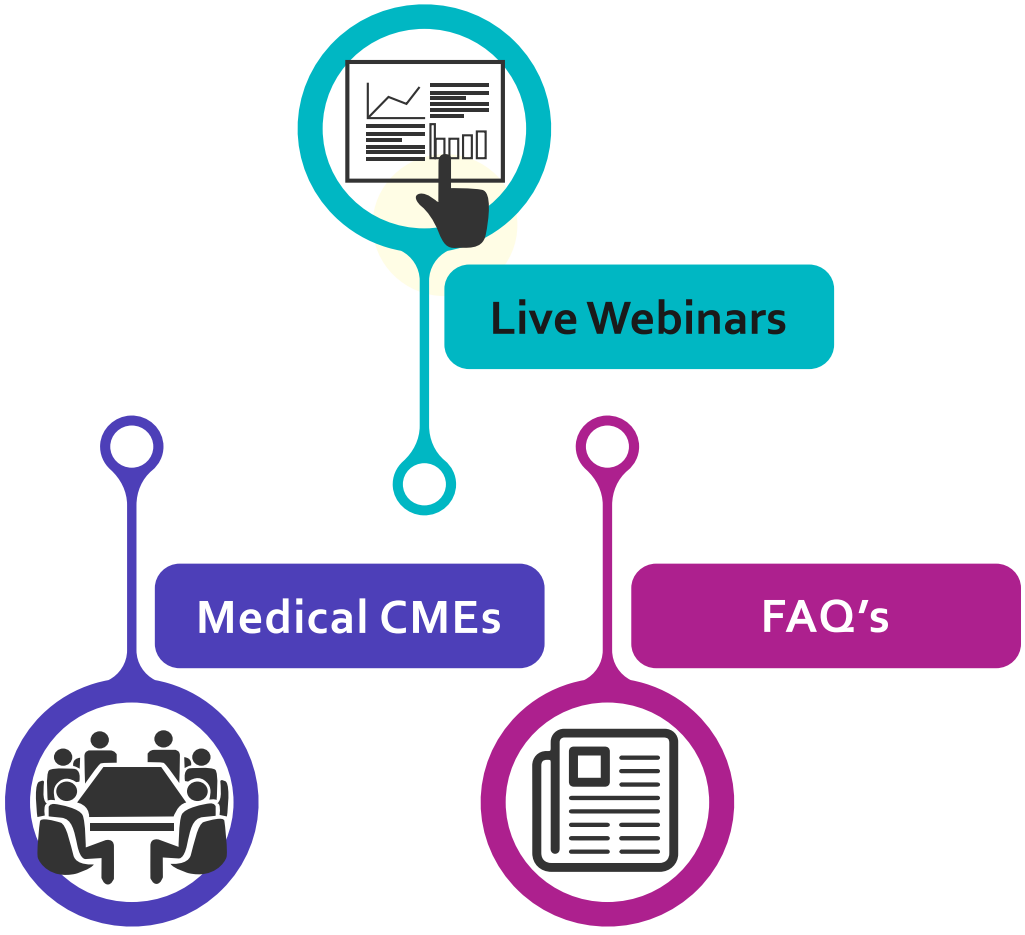

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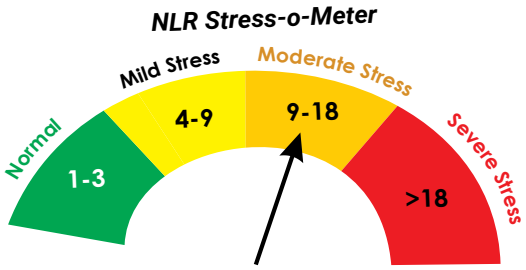

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