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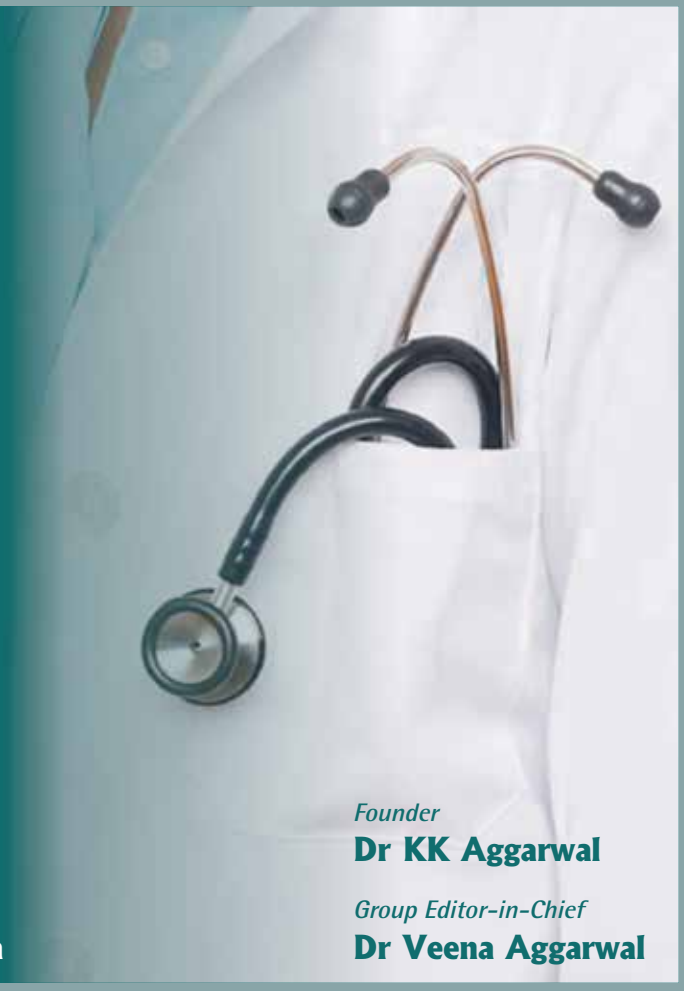

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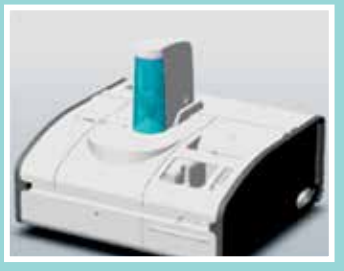

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HCFI DR KK AGGARWAL RESEARCH FUND

Impact of Poor Waste Management and Other Services in Urban Slums and Unauthorized Settlements

- Urban slums or unauthorized colonies and settlements have a great impact on the environment.
- Explosion of world population resulted in urban slums and continuous development of urban slums over the years poses an urgent environment threat due to unsanitary conditions and rampant disposal of untreated waste water and municipal solid waste in drains, rivers and other water bodies polluting them.
- People in these slums live in poorly constructed houses lacking vitals like social amenities and environmental services especially those related to water and sanitation. Hence, they are susceptible to dangerous diseases such as typhoid, hepatitis, cholera.
- There are 675 slums in Delhi and 82 have been provisionally added, i.e., they are yet to be notified under section 2(g) of Delhi Urban Shelter Improvement Board (DUSIB) Act, 2010 with cut-off date of 2006. All clusters prior to 1.1.2006 will be notified under section 2(g).
- There is a policy for their rehabilitation and relocation. For this the cut-off date is 1.1.2015.
- Clusters are unauthorized settlements, which come up on vacant land parcels which are intended for development of parks, schools, hospitals, which could not otherwise be developed. This is mostly government land.
- People who come for employment squatted upon these vacant land pockets.
- Government has launched schemes to provide basic facilities till they are rehabilitated or relocated such as community toilets, cement concrete paved lanes, drains on both sides of the roads, small parks for children to play, Basti Vikas Kendras for social activities, streetlight connections, water is supplied through hydrants and in some areas through regular connections by Delhi Jal Board (DJB), sanitation is being taken care of by the Municipal Corporation of Delhi (MCD).
- Initially their expansion was horizontal, now the clusters are also proliferating vertically.
- The government has evolved many schemes for their rehabilitation and relocation.
- Earlier the people living in these slums were given plots in peripheral areas of Delhi. Then the government thought of providing them housing (EWS flats) instead of plots under Jawaharlal Nehru Urban Renewal Mission scheme launched in 2005. After 2007, a scheme came up jointly by Delhi State Industrial and Infrastructure Development Corporation Ltd. (DSIIDC) and DUSIB, and lot of flats were constructed. Around 52 k flats were constructed and 16 k are still under construction.
- Very few people were relocated and people continue to live in these urban slums.

- Although lots of facilities have been extended, there is a problem of coordination between various departments in these slums.
- A concept of "Aadarsh (Model) Basti" was introduced and few NGOs were actively involved. Few clusters have benefited but rests are continuing to live in the same manner.
- Most of the flats constructed are in the periphery and people don't want to go to far-flung areas.
- There is a large population which is already staying in slum areas. It is difficult to shift them as source of income is attached to these areas.
- There is a clause in DUSIB Act that any relocation will be done within 5 km radius of their cluster, so that their livelihood is not uprooted.
- Constructing new flats and providing facilities is not difficult. The challenge lies in maintaining them once they have been constructed to keep them functional such as sanitation.
- Year to year monitoring and maintenance is very important especially in these high-density areas.
- Fire safety is another important issue. Untreated garbage lying in the open is a source of methane.
- Implementation of policies is poor. Despite providing many services, finances and lot of hard work, slums are not being improved.
- Because of the narrow lanes, vehicles cannot go in to collect waste and if it is collected manually, there is no space to keep it till it is picked up by vehicles. Proper waste disposal is the responsibility of every citizen living in that particular locality.
- We are not complying with the components of the Master Plan.
- Integration between functional areas of development is missing.
- Slum is a byproduct of development, but they are not an inevitable byproduct. They are an avoidable byproduct. It is an unorganized sector. There is a need to educate and train people.
- The vision should be to reduce the slum population.
- As population density increases, so does the waste that is generated and sewage. More infrastructure and trained manpower are required to manage them.
- Environmental burdens are addressed but not mitigation measures leading to accumulation of problems and health hazards.
- Integration, attachment, association and development have to go together.
- There are around 3.4 lakh jhuggis. Relocating them is a gigantic task.
- Most of the workforce in development projects are from outside, who settle down and establish a slum even after the project is over. There is a need to create workforce within the city.
- Similar problems are being faced in resettlement colonies.
- In 2020, the affordable housing rental scheme was launched. The flats lying vacant can be used as rental housing. This may take care of the labor which comes from outside. Through rent, maintenance and other expenses can be met.
- Delhi Development Authority (DDA) is taking up many *in situ* rehabilitation projects. The contractor who is taking up the *in-situ* project will pay Rs. 6000 rent per month to DUSIB for 3 years and later on it will be reverted to DUSIB.
- However, the problem is that people do not want to go to these houses even if they are within 5 km radius.
- Slums are a social and political problem.
- There should be a common minimum program for urban cities cutting across all party lines, e.g., if there is to be zero tolerance for slums, then all parties should agree to it.
- If slum is an unintended result, this means that there is some error in the project either planning or implementation.
- Therefore, urban planners have a lot to think about this to see that this byproduct does not appear in society.
- There has been too much focus on urban development. Instead, it should have been an integrated development of a region.
- Migration has increased due to the wide difference between urban and rural amenities.
- Provision of Urban Amenities in Rural Areas (PURA) would have balanced this difference and would have reduced migration to urban areas reducing slum generation.

Participants: Mr Paritosh Tyagi, Mr Sunil Mahajan, Dr Dipankar Saha, Dr M Dwarakanath, Prof Meenakshi Dhote, Mr Pradeep Khandelwal, Mr Neeraj Tyagi, Dr Anil Kumar, Dr S Sharma

HCFI Round Table Environment Expert Zoom Meeting – August 20, 2022 (Saturday, 11 am - 12 noon)

Dr Sanjay Kalra
Dept. of Endocrinology, Bharti Hospital, Karnal, Haryana, India; University Center for Research & Development, Chandigarh University, Mohali, Punjab, India

Dr Suneet Kumar Verma
Dept. of Internal Medicine, Alchemist, Panchkula, Haryana, India; Sparsh Clinic, Zirakpur, Punjab, India

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Glycemic Guardianship: World Health Organization Leads the Way

ABSTRACT

The prevalence of diabetes is rapidly increasing globally in epidemic proportions, but many people with diabetes remain undiagnosed or untreated. In view of this escalating prevalence, the World Health Organization (WHO) has launched the Global Diabetes Compact (GDC) campaign to improve the diagnosis and management of people with diabetes. To this end, a set of diabetes coverage targets, focusing on 80% of people living with diabetes, to be achieved by the year 2030, were defined at the 75th World Health Assembly for the first time in May this year. These targets aim to achieve not just glycemic control, but also blood pressure and lipid management at all levels of the health care system. India has the second largest number of people with diabetes in the globe. In this article, we have proposed the concept of "glycemic guardianship", which means activities carried out by the health care team and the health care system in partnership with the patient to ensure optimal care of diabetes. Recognizing and acknowledging our role as "glycemic guardians" of the nation will automatically pave the way to realize the targets set by the GDC.

Keywords: Diabetes, Global Diabetes Compact, coverage targets, World Health Assembly, glycemic guardians

The Global Diabetes Compact (GDC) is a campaign launched by the World Health Organization (WHO), on the 100th anniversary of the discovery of insulin, to improve prevention, treatment and care for diabetes. Marking a first, the 75th World Health Assembly recently (May 2022) voted upon a contemporary set of diabetes coverage targets, that are to be achieved by the year 2030. This puts a stamp of approval upon the aims of GDC.[1]

GLYCEMIC GUARDIANSHIP

In concordance with the aims and objectives of GDC, we propose the concept of glycemic guardianship. Glycemic guardianship refers to the activities carried out by the health care team and health care system, to ensure optimal care of the person, or group of people, living with diabetes. Glycemic guardianship can be operational at a macro-(country/regional), meso-(health care system), or micro-(individual) levels. It is ideally carried out in partnership with the person(s) living with diabetes. Glycemic guardianship benefits from well laid out aims, which facilitate effective and efficient accomplishment of goals. This has been bolstered by the WHO targets, which provide an umbrella for all actions related to glycemic guardianship.

CHALLENGES AND RESPONSE

The five GDC targets cover screening and diagnosis, outcomes of care and access to affordable drugs as well as monitoring tools (Box 1). The targets reflect the need for comprehensive vasculo-metabolic management and cardiovascular risk reduction in persons with diabetes. Without specifically mentioning particular groups, they call for attention to pediatric as well as mid-life and geriatric diabetes.

India is no stranger to the impact of the diabetes pandemic. With the second largest population of diabetes in the globe to care for,[2] the country's health care providers

Box 1. Targets for Diabetes Coverage, 2030

- Diabetes should be diagnosed in 80% of people living with the condition.
- Good glycemic control should be achieved in 80% of people diagnosed with diabetes.
- Blood pressure should be well-controlled in 80% of people diagnosed with diabetes.
- Statins should be taken by 60% of people with diabetes aged ≥40 years.
- Affordable insulin treatment should be accessible to 100% of people with type 1 diabetes.
- Affordable blood glucose self-monitoring should be accessible to 100% of people with type 1 diabetes.

work hard to screen, diagnose, manage and prevent the condition. The increasing prevalence of the disease, however, offsets the advances that have taken place in diabetes care and its delivery. This is the "Paradox of Plenty", where plentiful diabetes counteracts the potential of plenty of drugs and interventions that are available to treat the condition.

Our policy makers and health care providers have understood that diabetes is now endemic in society, and have begun tailoring their responses accordingly. Diabetes care is embedded in the primary health care system, the National List of Essential Medicines, Indian Public Health Standards and the National Programme for Prevention of Non-Communicable Diseases.[3-5] Diabetes complications find mention in the Ayushman Bharat health insurance scheme,[6] though the basic uncomplicated treatment is not yet covered by it.

THE FIVE TARGETS

Every journey has a destination, and milestones are necessary to assess our progress towards our goal. A similar situation exists in health care and in diabetes management.

The five targets laid down by GDC provide a roadmap for the Indian health care system. The law of two-thirds still operates in Indian diabetes epidemiology,[7] and a majority of people with diabetes remain undiagnosed, untreated or uncared for. Emphasis on screening and treatment, including not only glycemic but also blood pressure and lipid management, at every level of health care, is required. Glycated hemoglobin (HbA1c), a target for individual health, helps in risk stratification, choice of therapy and assessment of adequacy of treatment.[8] Use of statins as prophylaxis for cardiovascular disease should be encouraged, along with other interventions.[9]

SPECIAL FOCUS

Special focus on persons living with type 1 diabetes is also needed.[10] Insulin and glucose monitoring are essential for life, and these must be provided to all who need them. The Indian pharmaceutical industry is a world leader in manufacturing good quality drug at economical rates. Insulin is an essential drug, at national as well as WHO level and is now sold at Jan Aushadhi stores. Good quality glucose monitoring devices and ancillaries are also available, at economical rates. Integrated personalized diabetes management (IPDM) is being promoted, and glucovigilance has become an accepted part of diabetes care.[11]

SUMMARY

Ownership of this concept should be with all diabetes care providers. Once we accept and acknowledge that we are glycemic guardians of our great nation, we will automatically begin to guard our glycemic health. This, in turn, will ensure that we accomplish the goals set by GDC, and much more.

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■■■■

Study Reveals the Unhealthy Diets of Indian Teenagers

The study published in the journal *Current Developments in Nutrition*, showed that merely 1% of kids between the ages of 13 and 18 years could recall having consumed dairy products over the past 24 hours. The study also showed that the teenagers in Gujarat do not seem to be getting enough dairy staples, which are considered the building blocks of good health in children. The study funded by UGC examined the nutrition transitions among 937 children in the 13 to 18 age group from six states, i.e., Gujarat, Punjab, Maharashtra, Chhattisgarh, Assam and Tamil Nadu. The findings of the study were derived from two 24-hour diet recalls from the participants, and a Nutrition Transition Diet Score (NTDS) was used as an assessment index. Among all the states, the overall nutritional deviation was found to be the highest in children from Maharashtra, while the lowest was seen in Gujarat. In Gujarat, only 1% of the children surveyed stated that they had taken dairy products. On the other hand, only 2% enjoyed sodium-rich snacks. However, a significant percentage of children recalled eating fat-rich dishes (26%) and fried foods (30%).

In Tamil Nadu, a majority of children recalled eating foods with saturated fat (29%) and sodium-rich snacks (19%). Also, 4% added that they had sugar-sweetened beverages. In Maharashtra, a whopping 62% of the children claimed that they had bread, while 29% had added sugar to the food they were served. Only 11% remembered consuming dairy products. The study also pointed out those adolescents in Tamil Nadu had the highest daily energy intake at almost 2,045 kcal/day. Their diet had 314 g/day of carbohydrates, 54 g/day of protein and 64 g/day of fat. The study was conducted by Dr Nida Shaikh, a nutritionist from Georgia State University. She stated that in most cases, working parents, who are unable to provide home-cooked snacks, substitute them with packed/processed foods, resulting in metabolic syndrome among teenagers. Heart disease, stroke, and type 2 diabetes are a cluster of conditions that occur together, increasing the risk of heart disease, stroke, and type 2 diabetes.

(*Source: https://health.economictimes.indi atimes.com/news/industry/fat-sodium-sugar-study-lists-unhealthy-diets-of-Indian-kids/93564390*)

Gel Developed from Spider Silk Protein Used for Biomedical Applications

Dr Anna Rising, research group leader at the Dept. of Biosciences and Nutrition, Karolinska Institutet (KI), stated that her team has developed a completely new method for creating a three-dimensional gel from spider silk that can be used to deliver different functional proteins. She added that the proteins in the gel are tightly cross-linked and mild so that they can be used even for sensitive proteins. In the future, the researchers hope to develop an injectable protein solution that forms a gel inside the body. The ability to design hydrogels with specific functions opens up a range of possible applications, such as the controlled release of drugs into the body. In the chemical industry, it could be fused with enzymes, a form of protein used to speed up various chemical processes. The new study showed that the N-terminal domain of the spider silk protein can change shape and transition to small fibrils. When incubated at 37°C, the protein solution was converted into a gel. In addition, it can be fused with functional proteins that preserve their function in the gel. The research was funded by the European Research Council (ERC) and the Novo Nordisk Foundation.

(*Source: https://health.economictimes.indiatimes.com/news/industry/scientists-develop-gel-made-from-spider-silk-proteins-for-biomedical-applications/93579827*)

ORIGINAL ARTICLE

Insulin Initiation with Insulin Degludec/Insulin Aspart versus Insulin Glargine in Oral Antidiabetic Drugs Failure Patients with Type 2 Diabetes Mellitus: A Real-World Study from India

SANJAY CHATTERJEE*, SOUMYABRATA ROY CHAUDHURI†, ANIRBAN MAJUMDER†, DEBMALYA SANYAL†

ABSTRACT

Context: Oral antidiabetic drug (OAD) failure is an indication for starting insulin therapy, but there is still a dilemma as to whether basal insulin or a premixed/co-formulation analog should be the choice. **Aim**: To compare the safety and efficacy of once daily (OD) insulin degludec/insulin aspart (IDegAsp) to OD insulin glargine (IGlar U100) in insulin-naïve Indian subjects with type 2 diabetes mellitus (T2DM), inadequately controlled with OADs alone. **Setting and design**: Retrospective study. **Methods and material**: Data was retrieved from the author's clinic database of OAD failure patients (18-80 years), who were started either with (IGlar U100, n = 120) or IDegAsp (n = 89) OD over and above the standard of care. Data of fasting plasma glucose (FPG), postprandial plasma glucose (PPG) and glycated hemoglobin (HbA1c) from baseline and at last follow-up visits were collected. **Statistical analysis used**: Baseline characteristics and change in study parameters during the follow-up period were computed between two groups (IGlar U100 vs. IDegAsp) by unpaired *t*-test and paired *t*-test, respectively. ANCOVA test was used to compute percentage reduction in body weight, body mass index (BMI), FPG, PPG and HbA1c in between two groups (IGlar U100 vs. IDegAsp). **Results**: IDegAsp caused a significantly greater reduction in FPG, PPG and HbA1c as compared to the IGlar U100 arm. There was no significant difference in the proportion of patients with hypoglycemia between IDegAsp and IGlar U100 groups (p = 0.208). No episodes of severe hypoglycemia were reported. **Conclusion**: Comparison of IDegAsp and IGlar U100 OD in T2DM patients indicated that both were relatively safe but the former controlled FPG and PPG levels more effectively.

Keywords: Oral antidiabetic agent, insulin, hypoglycemia, type 2 diabetes mellitus, India

Currently, 573 million people are living with diabetes globally. There is a worldwide increase in the prevalence and incidence of diabetes which is predicted to rise to 643 million by 2030. In India, the number of adults with diabetes in 2021 was 74.2 million which is expected to exceed 124 million by 2045.[1] Several national and international guidelines on the treatment of type 2 diabetes mellitus (T2DM) exist.[2-5] As per all the national and international guidelines, oral antidiabetic drug (OAD) failure is an indication for starting insulin therapy. It can be defined as a clinical situation where glycated hemoglobin (HbA1c) remains above goal, despite concurrent use of an optimum dose of three or more glucose-lowering drugs of different classes, one of which should be metformin and the second, preferably a sulfonylurea, provided adequate diet and exercise have been followed, and comorbid conditions causing hyperglycemia have been ruled out.[6] Nevertheless, there is still a dilemma as to whether basal insulin or a premixed/co-formulation analog should be the choice for initiation.

Insulin treatment is administered as an injection of basal insulin or a combination of bolus and basal insulins. Insulin degludec/insulin aspart (IDegAsp) is a soluble combination of insulin degludec (IDeg), an ultra-long-acting basal insulin and the rapid-acting insulin analog, insulin aspart (IAsp). Within the IDegAsp formulation and after subcutaneous injection, independent pharmacokinetic/pharmaco-dynamic characteristics of the components are

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maintained.[7] IDeg has a flat and stable glucose-lowering effect that results in a much longer duration of action (>42 h), and four times lower pharmacodynamic variability than insulin glargine (IGlar U100) under steady-state conditions.[8-10] This in turn results in a lower risk of hypoglycemia, particularly nocturnal hypoglycemia with IDeg, a distinct clinical advantage over other basal insulin.[11,12]

In T2DM, IDegAsp once daily (OD) has been analyzed as initiation as well as intensification strategy. IDegAsp can be initiated in either OD or twice daily (BID) doses based on the clinical situation, as monotherapy or together with metformin. T2DM patients switching from OD basal or premix insulin therapy can be converted unit-to-unit to IDegAsp OD at an equivalent previous total daily insulin dose.[13,14] IDegAsp has been shown to provide significant reductions in fasting plasma glucose (FPG), the total daily dose of insulin, and rate of overall and nocturnal hypoglycemia as compared to biphasic insulin.[15]

To suit Indian reality of diabetes management (such as high carbohydrate diet), guidelines and recommendations need to be adapted.[16,17] Thus, consensus on initiation and intensification of premix insulin in the management of T2DM recommends premix insulin/co-formulation for effective and accessible glycemic control (predominantly postprandial hyperglycemia).[18] This real-world study aimed at comparing the safety and efficacy of IDegAsp OD to that of IGlar U100 OD in insulin-naïve Indian subjects with T2DM insufficiently controlled with oral antidiabetic medicines alone.

SUBJECTS AND METHODS

Data was retrieved from the author's clinic database of OAD failure patients (18-80 years) who were started on basal insulin (IGlar U100, n = 120) or IDegAsp (n = 89) OD over and above the standard of care. The data of FPG, postprandial plasma glucose (PPG) and HbA1c from baseline and at last follow-up visit was collected for analysis.

Key eligibility criteria for study consisted of the following:

Inclusion Criteria

- Indian insulin naïve adults with T2DM.
- Age 18 to 80 years.
- On stable optimal dose of 3 OADs for last 90 days.
- HbA1c <11%.

Exclusion Criteria

- Type 1, gestational diabetes mellitus (GDM) and other types of diabetes.
- Pregnancy and lactation.
- Requiring insulin as rescue medication due to intercurrent illness in last 3 months.
- Incomplete dataset and irregular intake of history of insulin.
- Faulty injection technique.

All patients visiting the author's outdoor clinic from 1st January 2019 to 30th October 2019 were assessed for the type of diabetes therapy. Patients who had been on basal insulin (IGlar U100) or IDegAsp, OD for 35 weeks or more were included in the study. Informed consent was obtained from all subjects. Details were collected regarding basic demographics, dosage, frequency of insulin, body weight, blood pressure and glycemic control. Indications for the use of IGlar U100 and IDegAsp were recorded. Data is expressed using descriptive statistics as mean ± SEM (standard error of the mean), wherever applicable. Data was analyzed using SPSS/Microsoft Excel software.

Baseline characteristics and changes in study parameters during the follow-up period were compared between two groups (IGlar U100 vs. IDegAsp) by unpaired *t*-test and paired *t*-test, respectively. Analysis of covariance (ANCOVA) test was used to compare the percentage change in body weight, body mass index (BMI), FPG, PPG and HbA1c between two groups (IGlar U100 vs. IDegAsp). Data at baseline, 35.56 ± 25.97 weeks (IGlar U100 cohort), and 28.53 ± 19.63 weeks (IDegAsp cohort) was used for analysis.

Assessment

Subjects were treated with either IDegAsp or IGlar U100 OD, using stratification (by previous OAD treatment). The IDegAsp dose was administered subcutaneously just before the largest meal of the day and IGlar U100 (Lantus®, SoloSTAR®, Sanofi-Aventis, Frankfurt, Germany) was administered according to the approved labeling (either before breakfast or at bedtime).

RESULTS

The baseline demographics and clinical parameters were found to be comparable, except for body weight that was nonsignificantly higher in the IGlar U100 arm and hence required a higher insulin dose. The mean (±SD) duration of follow-up was 35.56 ± 25.97 weeks in IGlar U100 cohort and 28.53 ± 19.63 weeks in IDegAsp

cohort and this difference was nonsignificant (p = 0.104). The glycemic triad, i.e., FPG, PPG and HbA1c was significantly reduced from baseline in both the arms (Table 1).

However, IDegAsp caused statistically significant greater reduction in FPG, PPG and HbA1c as compared to the IGlar U100 arm. Three patients of IGlar U100 complained of injection site burning but no such adverse events were reported in the IDegAsp arm. There were overall 18 episodes of hypoglycemia in the IGlar U100 group and 10 episodes in the IDegAsp group. Though the proportion of patients with hypoglycemia was higher in IGlar U100 group as compared to IDegAsp group, the difference failed to reach any statistical significance (p = 0.208; Chi-square test). Severe hypoglycemia episodes were not reported.

Eighty-nine subjects (53 men and 36 women; mean age 59.49 ± 3.31 years) received IDegAsp and, 120 subjects (71 men and 49 women; mean age 61.88 ± 10.87 years) who received IGlar U100 treatment had completed the duration of 26 weeks or more. Fall in HbA1c from baseline to follow-up visit was 9.61 ± 0.78% to 8.56 ± 0.18% in the IGlar U100 cohort, and from 9.61 ± 2.12% to 8.02 ± 1.02% in the IDegAsp cohort. Mean percentage reduction in the IDegAsp cohort was found to be -16.55 ± 4.07 and was statistically significant (p = 0.044) compared -9.88 ± 2.22 in the IGlar U100 cohort.

FPG decreased from 230.69 ± 7.49 mg/dL to 154.78 ± 7.59 mg/dL (IGlar U100 cohort), from 236.08 ± 86.31 to 134.31 ± 51.40 (IDegAsp cohort) and was found statistically significant (p < 0.001). Mean percentage reduction was -33.04 ± 8.61 (IGlar U100 cohort) and -34.63 ± 9.12 (IDegAsp cohort) with p-value 0.041.

Mean percentage reduction in PPG was -20.34 ± 2.89 (IGlar U100 cohort) and -41.53 ± 4.76 (IDegAsp cohort) with p-value 0.036. PPG decreased from 295.18 ± 11.75 mg/dL to 236.37 ± 10.58 mg/dL (IGlar U100 cohort) and from 309.06 ± 106.76 to 180.76 ± 55.09 (IDegAsp cohort) and was found statistically significant (p < 0.001). Mean insulin dose/kg body weight at the end of 26 weeks was significantly lower for patients treated with IDegAsp (0.23 ± 0.22) than IGlar U100 (0.42 ± 0.57), (p = 0.010).

DISCUSSION

In this Indian real-world evidence study of 26 weeks, IDegAsp administered OD significantly improved HbA1c levels as compared to IGlar U100 OD. While this

Table 1. Baseline Characteristics of the Patients

	IGlar U100 (n = 120)	IDegAsp (n = 89)	P (*t*-test)
Male, n (%)	71 (59.17)	53 (59.55)	0.629
Female, n (%)	49 (40.83)	36 (40.45)	
Age (years), Mean ± SEM	61.88 ± 10.87	59.49 ± 3.31	0.816
Body weight (kg), Mean ± SEM	69.65 ± 2.13	68.51 ± 11.88	0.716
SBP (mmHg), Mean ± SEM	132.22 ± 2.21	130.65 ± 2.28	0.487
DBP (mmHg), Mean ± SEM	80.56 ± 1.31	78.97 ± 1.73	0.943
BMI (kg/m^2), Mean ± SEM	26.78 ± 3.22	26.97 ± 2.19	0.865
FPG (mg/dL), Mean ± SEM	230.69 ± 7.49	236.08 ± 86.31	0.206
PPG (mg/dL), Mean ± SEM	295.18 ± 11.75	309.06 ± 106.76	0.578
HbA1c (%), Mean ± SEM	9.61 ± 0.78	9.61 ± 2.12	0.385
Insulin dose (IU), Mean ± SEM	13.44 ± 0.41	10.23 ± 1.41	0.001
Insulin dose/kg body wt. (IU), Mean ± SEM	0.20 ± 0.18	0.14 ± 0.09	0.032
LDL cholesterol (mg/dL), Mean ± SEM	90.01 ± 3.99	81.31 ± 4.86	0.039
Serum creatinine (mg/dL), Mean ± SEM	0.95 ± 0.03	1.01 ± 0.33	0.701

SEM = Standard error mean; SBP = Systolic blood pressure; DBP = Diastolic blood pressure; BMI = Body mass index; FPG = Fasting plasma glucose; PPG = Postprandial plasma glucose; HbA1c = Glycated hemoglobin; LDL = Low-density lipoprotein.

P < 0.05 considered as statistically significant, p computed by unpaired *t*-test.

analysis is retrospective, not controlled, and is limited by the fact that dropouts were not studied, it does add value to existing literature. It must be noted that this study was performed in a nonreimbursed environment, where patients have to pay from their pocket for insulin and other supplies.

A multicenter, prospective, noninterventional, preference study was conducted with T2DM patients (n = 505) in India, with biphasic insulin aspart 30/70 (BIAsp 30). After 12 weeks of treatment, 96.4% of patients were willing to pay for BIAsp 30. Significantly improved mean treatment and device satisfaction was reported from baseline as well ($p < 0.0001$).[19]

As IDegAsp comprises rapid-acting insulin aspart and ultra-long-acting IDeg, it allows control over both FPG and PPG levels. IDegAsp provides advantages in dose titration, dose timing flexibility, treatment intensification (from OD to BID dose adjustments), lower injection burden, easy switching and lower hypoglycemia risk. IDegAsp and other antihyperglycemic drugs can be co-administered; however, sulfonylureas need to be stopped or their dose reduced. On the other hand, dose of IDegAsp may need to be lowered upon the addition of glucagon-like peptide-1 receptor agonists or sodium-glucose co-transporter-2 inhibitors.[13,14] In a 12-week follow-up study with treatment-naïve, recently diagnosed T2DM Indian patients (n = 41), Chaudhuri et al observed a significant improvement in FPG, PPG and HbA1c over the study period with 85.4% of patients receiving OD IDegAsp (10 units) + metformin extended-release (1 g/day).[20] Only 2 patients were reported for symptomatic hypoglycemia and none for severe or nocturnal hypoglycemia. Weight changes were nonsignificant. Conclusively, IDegAsp (OD or BID) was safe and effective for treatment-naive Indian patients.

In a 16-week long exploratory study, it was found that IDegAsp was able to achieve target HbA1c <7.0%, without confirmed hypoglycemia in 67% of subjects (who were poorly controlled on metformin). The daily dose requirement of IDegAsp was 0.57 ± 0.23 U/kg and was 13% lower than that of BIAsp 30. In this study, significantly lower FPG and lower rate of confirmed hypoglycemia were noted with IDegAsp.[21] Another 26-week long Asian study observed a lower dose requirement of IDegAsp OD (0.79 U/kg), as compared to BIAsp 30, in controlling HbA1c, with lower FPG and similar (low) risk of severe hypoglycemia.[22]

Effective glycemic control was achieved including achievement of target HbA1c levels (8.02 ± 1.02%) with IDegAsp, after 26 weeks of treatment, with a percentage reduction -16.55 ± 4.07 in the IDegAsp cohort compared to -9.88 ± 2.22 in the IGlar U100 cohort ($p = 0.044$) (Table 2). Superior reduction in HbA1c was seen with OD IDegAsp as compared to OD IGlar U100 in a

Table 2. Change in Study Parameters During the Follow-up Period

	IGlar U100 Cohort (n = 120)			IDegAsp Cohort (n = 89)		
	Baseline, Mean ± SEM	Follow-up Mean ± SEM	P	Baseline, Mean ± SEM	Follow-up Mean ± SEM	P
Body weight (kg)	69.65 ± 2.13	69.58 ± 2.13	0.714	68.51 ± 11.88	69.04 ± 1.19	0.873
BMI (kg/m^2)	26.78 ± 3.22	27.05 ± 0.69	0.830	26.97 ± 2.19	27.19 ± 3.42	0.812
SBP (mmHg)	132.22 ± 2.21	130.61 ± 1.59	0.736	130.65 ± 2.28	130.44 ± 1.64	0.907
DBP (mmHg)	80.56 ± 1.31	81.36 ± 1.07	0.782	78.97 ± 1.73	77.21 ± 1.71	0.901
FPG (mg/dL)	230.69 ± 7.49	154.78 ± 7.59	<0.001	236.08 ± 86.31	134.31 ± 51.40	<0.001
PPG (mg/dL)	295.18 ± 11.75	236.37 ± 10.58	<0.001	309.06 ± 106.76	180.76 ± 55.09	<0.001
HbA1c (%)	9.61 ± 0.78	8.56 ± 0.18	<0.001	9.61 ± 2.12	8.02 ± 1.02	<0.001
Serum creatinine (mg/dL)	0.95 ± 0.03	0.99 ± 0.03	0.901	1.01 ± 0.33	1.03 ± 0.39	0.897
Insulin dose (IU)	13.44 ± 0.41	24.1 ± 1.45	<0.001	10.23 ± 1.41	16.31± 3.78	0.768
Insulin dose/kg body wt. (IU), Mean ± SEM	0.20 ± 0.18	0.42 ± 0.57	<0.001	0.14 ± 0.09	0.23 ± 0.22	0.010

SEM = Standard error mean; SBP = Systolic blood pressure; DBP = Diastolic blood pressure; BMI = Body mass index; FPG = Fasting plasma glucose; PPG = Postprandial plasma glucose; HbA1c = Glycated hemoglobin.

$P < 0.05$ considered as statistically significant, p computed by paired *t*-test.

Table 3. Percentage Reduction in Study Variables

	IGlar U100	IDegAsp	P (ANCOVA)
Percent change in body weight, Mean ± SEM	-0.11 ± 0.02	0.72 ± 0.66	0.102
Percent change in BMI, Mean ± SEM	-0.93 ± 0.08	0.85 ± 0.52	0.712
Percent change in FPG, Mean ± SEM	-33.04 ± 8.61	-34.63 ± 9.12*	0.041
Percent change in PPG, Mean ± SEM	-20.34 ± 2.89	-41.53 ± 4.76*	0.036
Percent change in HbA1c, Mean ± SEM	-9.88 ± 2.22	-16.55 ± 4.07*	0.044

SEM = Standard error mean; BMI = Body mass index; FPG = Fasting plasma glucose; PPG = Postprandial plasma glucose; HbA1c = Glycated hemoglobin.

P < 0.05 considered as statistically significant, p computed by ANCOVA test adjusted for baseline values.

26 weeks randomized controlled trial wherein patients in the OD IDegAsp arm took it before the major meal.[23] In this study, participants on IDegAsp received relatively lower mean total insulin dose compared with those on IGlar U100. Patients receiving IDegAsp were able to reduce their FPG levels (134.31 ± 51.40) to a greater extent than with IGlar U100 (154.78 ± 7.59) $p < 0.001$, while receiving lower insulin dose (Table 2), suggesting that the glucose-lowering effects of IDeg are preserved in IDegAsp. A nonsignificant increase in mean body weight was observed in patients at 26 weeks associated with IDegAsp. IDegAsp provided significant control as compared to IGlar U100 in reducing the PPG increment. Monnier et al[24] had reported that reduction of PPG excursions has profound effects on long-term glycemic control once FPG has reached the target. The results of this real-world study support this observation as we find a larger reduction in HbA1c with IDegAsp while, the reduction in FPG was similar in both treatment groups after 26 weeks (Table 3).

Both treatments had similar safety profiles. Findings demonstrate that IDegAsp results in a lower rate of hypoglycemia compared with IGlar U100 when using this threshold in the Indian population.[23] The BOOST study data also supports this finding. As hypoglycemia is of particular concern in the elderly, the results of this post hoc analysis are reassuring. The low rates of hypoglycemia are suggest that there is no need for special precautions when using IDegAsp in the elderly.[13] A different approach was selected by Monnier and co-authors[24] to estimate the relative contribution of FPG and PPG to the overall glycemia. It was stated that PPG plays a major role in patients suffering from mild or moderate hyperglycemia. In Asian T2DM patients, PPG at 4 and 24 hours after meals was a predominant contributor to excess hyperglycemia in well-controlled patients and was equally important as FPG or PPG in moderately to poorly controlled patients with mean HbA1c up to 10%.[25] The data on the Indian population from this study indicates that PPG strongly correlates with HbA1c or contributes significantly to overall glycemic control. Hence, PPG monitoring will be more conducive for optimal glycemic control and prevent long-term diabetes complications than FPG alone in the absence of HbA1c, especially in developing countries.

The STARCH study on the Indian population showed that T2DM patients from across India consume higher carbohydrates (CHO) in their diet (such as rice, idli and so on), more than the dietary recommendations.[14,25] Around 64.1 ± 8.3% (95% confidence interval [CI] 63.27-64.93) of total calories came from total CHO in the T2DM group. This reflects that CHO consumption by Indian T2DM patients is higher (Δ4.1% above the upper limit of 60%) than that recommended by the guidelines and within the recommended limits as per the WHO expert consensus. In addition to dietary and lifestyle modifications, multiple therapeutic strategies like insulin may benefit T2DM patients. This approach may have a leading role in an Indian setting where the role of α-glucosidase inhibitors (AGIs) is more significant because of CHO-rich meal, as seen in this study.[14] The choice of insulin for initiation has been a matter of debate, with evidence slightly being in favor of basal insulin as recommended by various western guidelines. Nonetheless, insulin initiation was considered at HbA1c levels as high as 8.5% or 9%, where the contribution of FPG was found to be substantially higher in the western population. On the contrary, a study done by Wang et al has conclusively revealed contribution of PPG at all quintiles of HbA1c in the South-East Asian population.[25] While premixed analogs were a part of the International Diabetes Federation (IDF) guidelines to initiate insulin, studies revealed greater reduction of HbA1c at the cost of increased hypoglycemia. Availability of IDegAsp with data of reduced overall and nocturnal hypoglycemia

versus premixed analogs as well as IGlar U100 made us ponder about its utility as a choice of once daily insulin in OAD failure subjects. IDegAsp demonstrated greater reduction in FPG, PPG and HbA1c as compared to IGlar U100. On the safety front, no statistically significant difference in hypoglycemia was noted between the two arms.

CONCLUSION

In conclusion, IDegAsp OD was significantly better as compared to IGlar U100 in improving glycemic control and in controlling PPG excursions without compromising FPG control or safety in Indian patients. IDegAsp OD provides predictable and efficacious FPG and PPG control in insulin-naïve patients with T2DM in a single injection while significantly reducing the risk of nocturnal-confirmed hypoglycemia compared with IGlar U100 in the Indian population. In the context of high CHO utilization in India, or patients with dominant postprandial hyperglycemia, premix insulin/co-formulation can offer effective and convenient glycemic control.

Key Messages

IDegAsp OD superiorly improves glycemic control and PPG excursions without compromising FPG control than IGlar U100. IDegAsp provides effective FPG and PPG control along with significant risk reduction of nocturnal-confirmed hypoglycemia. In a high carbohydrate consumption setting or predominant postprandial hyperglycemia, premix insulin/co-formulation can offer effective and convenient glycemic control.

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Prevalence of Neurological Complications in Children with COVID-19

Hospitalized children with COVID-19 are at risk of developing febrile seizures and other neurological complications, suggests a study reported in the journal *Pediatrics*.[1]

Antoon et al conducted a cross-sectional study of children hospitalized with COVID-19 aged 2 months to <18 years from March 2020 to March 2022 with an objective to identify the neurologic complications associated with COVID-19 in this age group and the factors associated with these complications, which included encephalopathy, encephalitis, febrile seizure, nonfebrile seizure, aseptic meningitis, brain abscess and bacterial meningitis.

Out of the 15,137 children included in the analysis, 1060 (7%) developed a neurologic complication. Febrile seizure was the most common neurological complication occurring in nearly 4% of patients followed by nonfebrile seizures (2.3%) and encephalopathy (2.2%). About 75% of these children had not underlying neurological disorder. They also had longer duration of hospitalization, higher ICU admission rates as well as prolonged length of ICU stay including rehospitalization and mortality rates.

Children who had a neurologic complex chronic condition were 4-times more likely to develop a neurologic complication with adjusted OR of 4.14. Younger age, infection during the Delta wave and presence of a non-neurologic complex chronic condition were associated with lower risk of such complications with adjusted ORs of 0.97, 0.71 and 0.80, respectively.

This study has shown that neurological complications are frequent in children hospitalized with COVID-19. Compared to those without neurological complication, their prognosis was also poor. Timely diagnosis of such complications can improve their outcomes. Prevention is always better than cure. All eligible children, particularly those who have underlying neurologic conditions or other at-risk groups, should be fully vaccinated on schedule. All COVID-19 preventive measures should be strictly adhered to.

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CLINICAL STUDY

Hematological Parameters in HIV Patients: Association with CD4 Count

ASHUTOSH KUMAR KARN*, ANJUM PARVEZ†, HS KHAN†

ABSTRACT

Background: Around 2.1 million people are currently living with human immunodeficiency virus (HIV) infection in India. Hematological parameters have been proposed as alternative markers of HIV infection in areas with limited resources. This study aimed to describe hematological parameters in patients with HIV infection and to determine their association with CD4 cell counts. **Methods:** This cross-sectional study assessed 100 HIV patients on antiretroviral therapy (ART). Their blood samples were collected to measure complete blood count (CBC) and CD4 count. Patients with known hematological disorders, critically ill patients, and those not willing to give informed consent were excluded. The Chi-square test was used to find the association between hematological parameters and CD4 counts. **Results:** Most patients with HIV infection had anemia (85%), followed by thrombocytopenia (42%) and neutropenia (36%). There was a statistically significant association between the number of patients having anemia and CD4 cell counts. **Conclusion:** Hematological changes are common in HIV patients. Hematological parameters should be routinely monitored and managed to reduce morbidity. Also, patients with unexplained low blood counts should be screened for underlying HIV infection.

Keywords: HIV, anemia, CD4 count

Around 2.1 million people in India are estimated to have human immunodeficiency virus (HIV).[1] According to National AIDS Control Organization (NACO), the national prevalence is 0.22% (0.17-0.29%).[2] A higher prevalence of 7% has been reported in high-risk groups.[1]

HIV attacks the immune system of the body. Opportunistic infections can take advantage of a weakened immune system and cause fatal health problems.[3] The concentration of HIV RNA and CD4 count are important biomarkers of disease progression.[4-6] Total lymphocyte count, white blood cell (WBC) count, and hemoglobin concentration have been proposed as alternative markers of HIV infection, especially in developing countries with limited financial resources.[7]

This study aimed to describe the hematological parameters in patients with HIV infection and to determine their association with CD4 cell counts.

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METHODS

This cross-sectional study was conducted at a tertiary care teaching hospital in North India after approval from the Institutional Ethics Committee. Informed consent was obtained from all participants. One hundred patients coming to the ART Unit of Medicine OPD over 6 months were included in the study. Patients with known hematological disorders, critically ill patients, and those not willing to give informed consent were excluded. A semi-structured proforma was used to gather relevant information. Patient's blood samples were taken to measure their complete blood count (CBC) and CD4 counts. All patients were on ART at the time of taking their blood samples. Anemia, thrombocytopenia, leukopenia, neutropenia and lymphopenia were looked for in CBC. Their association with CD4 cell counts was determined.

Operational Definitions

Anemia was defined as hemoglobin <13 g/dL in males and <12 g/dL in females. Leukopenia was defined as WBC <4,000/μL. Thrombocytopenia was defined as a platelet count of <1,00,000/μL. Neutropenia was defined as an absolute neutrophil count of <1,500/μL. Lymphopenia was defined as a total lymphocyte count of <1,000/μL.[8]

Sample Size Calculation

Open Epi software was used to calculate the sample size.[9] Taking anticipated frequency as 0.22,[2] within 1% confidence limits and 95% confidence level, the sample size was calculated as 85.

Data Analysis

SPSS version 20.0 was used for statistical analysis. Descriptive statistics were used to analyze socio-demographic variables. The Chi-square test was used to determine the association between hematological parameters and CD4 counts. P value <0.05 was considered statistically significant.

RESULTS

We assessed 100 patients with HIV infection. There were 50 males and 50 females. They were in the age group 18 to 60 years with a mean age of 29.9 years. Most patients presented with fatigue (69 patients, 69%), fever (61 patients, 61%) and weight loss (44 patients, 44%). Other symptoms observed were cough (22 patients, 22%) and diarrhea (10 patients, 10%).

Anemia was the most common hematological abnormality seen in 85 patients (85%), followed by thrombocytopenia in 42 patients (42%) and leukopenia in 11 patients (11%). Neutropenia was seen in 36 patients (36%), whereas only 9 patients (9%) had lymphopenia. Sixty-eight out of 85 (80%) patients had normocytic normochromic anemia, whereas 7 (8%) had microcytic hypochromic anemia.

Sixty-four patients had CD4 cell count ranging from 201 to 500 cells/μL. Twenty-five patients had ≤200 CD4 cells/μL. Eleven patients had more than 500 CD4 cells/μL.

We found a statistically significant association between CD4 cell counts and the number of patients having anemia and neutropenia (Table 1). With a decrease in CD4 cell counts, more patients were found to have anemia and neutropenia.

DISCUSSION

This study was planned to describe hematological parameters in patients having HIV infection and to determine their association with CD4 cell counts.

We found anemia in 85% of HIV patients in our study. Our finding was similar to that reported by Parinitha et al. They assessed 250 HIV patients in Karnataka and found anemia in 210 of them (84%). Normocytic normochromic was the most common type of anemia,[10] as was also the case in our study.

Anemia in HIV infection has varied causes. High viral load, opportunistic infections like *Mycobacterium avium* complex (MAC), inflammatory cytokines and malignancy play important roles. Also, zidovudine can cause myelosuppression and lead to macrocytic anemia. Defective iron metabolism, reutilization and vitamin B12 deficiency are other causes.[10,11]

Hemoglobin concentration has been proposed as an alternative marker of HIV prognosis, especially in resource-poor developing countries.[7] Durandt et al have discouraged this practice as few other causes like nutritional deficiencies, are independent causes for anemia and are unrelated to HIV infection.[12] But in the absence of better markers for disease progression in resource-poor areas, we the severity of anemia may be used as an indicator of disease progression.

We found neutropenia in 36% of patients. Also, there was a statistically significant association between CD4 cell counts and the number of patients having neutropenia. High viral load, low CD4 cell counts and use of drugs like sulfamethoxazole + trimethoprim are responsible for neutropenia in patients with HIV infection.[12]

High viral load directly affects hematopoiesis and leads to thrombocytopenia, leukopenia and lymphopenia, in addition to anemia and neutropenia.[10,12] But we did not find a significant association of CD4 cell counts with the number of patients having thrombocytopenia,

Table 1. Association Between Hematological Parameters and CD4 Cell Counts

Parameter	CD4 cell count (per μL) ≤200 (n = 25)	CD4 cell count (per μL) 201-500 (n = 64)	CD4 cell count (per μL) >500 (n = 11)	Chi-square statistic (P value)
Anemia (No. of cases)	23	51	11	26.063 (0.02)
Thrombocytopenia (No. of cases)	11	28	3	8.962 (0.06)
Leukopenia (No. of cases)	5	5	1	17.946 (0.22)
Neutropenia (No. of cases)	4	28	4	15.924 (0.04)
Lymphopenia (No. of cases)	6	3	0	13.965 (0.08)

leukopenia or lymphopenia. While for thrombocytopenia, statistical significance just missed the mark, p values were much higher for leukopenia and lymphopenia. The smaller sample size may have contributed to this statistical nonsignificance in our study. Future studies with larger sample sizes may give a better idea of the association between the two.

We propose regular monitoring and management of hematological changes in HIV patients to reduce morbidity. All patients who were identified to have hematological changes in our study, were requested to follow-up every 4 weeks for monitoring of CBC. As oral iron therapy takes 2 to 3 weeks to show its effects, we decided to monitor CBC at an interval of 4 weeks. But any further data was not collected as it was beyond the scope of this study.

Also, a progressive decline in all cell lines may indicate disease progression. Future longitudinal studies may be able to throw a better light on frequency of monitoring of these hematological parameters as a marker of disease progression.

Fatigue has been reported as the most common symptom of HIV infection.[13,14] It was also the most common presenting symptom in our study. Chronic ongoing inflammatory processes within the cardiovascular system and brain may be responsible for fatigue in HIV patients.[15] Fever also occurs, mostly due to superimposed opportunistic infections like tuberculosis and MAC.[16] Most opportunistic infections occur when CD4 cell count is <500 cells/mm^3.[17]Also, weight loss of even 5% has been associated with an increased risk of developing opportunistic infections in HIV patients.[18]

Eighty-nine of 100 patients in our study had CD4 cell count <500 cells/mm^3. This may have contributed to the high prevalence of fever and weight loss in our study. The causes of these symptoms need to be looked for and managed effectively to give patients a better quality of life.

CONCLUSION

Anemia and neutropenia are most commonly associated with a decrease in CD4 counts in HIV patients.

Our study had a small sample size of 100 patients. This is a limitation of our study. Convenience sampling was used instead of random sampling. Also, this study had a cross-sectional design. All these factors may affect its generalizability.

Despite certain limitations, our study recommends that patients with unexplained low blood counts should be screened for HIV infection, especially in high-risk populations and areas where the prevalence of HIV is higher.

It also invites the attention of researchers to explore this aspect further. Longitudinal studies with larger sample sizes will be beneficial in describing the course and progression of hematological changes in HIV patients. They can also guide in formulating recommendations related to the frequency of monitoring of hematological parameters.

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■■■■

Women are More Prone to Develop Hypertension after 50

A study by the Public Health Foundation of India (PHFI) showed that Indian women in their 50s are more likely than men in the same age group to have hypertension.

The researchers evaluated the data gathered from three large national surveys which included the Longitudinal Ageing Study of India wave-1, the Study of Ageing and Health wave-2, and the National Family Health Survey-4. Each comprised of a representative sample of Indian adults from all the states and Union territories, with a sample size ranging up to 3,00,000 people.

According to Prof Parimala Mohanty, the study's author, the findings showed that Indian women had a higher risk of having hypertension after turning 50, which was consistent with findings from earlier studies conducted in several Western countries. The experts also noted that age-related BP increase was more pronounced among women than those among males. One of the main reasons behind the rise in women's hypertension cases after 50 years of age was the bio-hormonal changes postmenopausal. (*Source: Livemint, August 17, 2022)*

UNICEF: World's First Malaria Vaccine to Benefit Millions of Children

The United Nations Children's Fund (UNICEF) has given the pharmaceutical company GSK a contract for the first ever supply of a malaria vaccine with a potential value of USD 170 million. If fulfilled, the agreement would result in the availability of 18 million doses of RTS,S over the following 3 years, potentially saving thousands of lives each year.

Etleva Kadilli, Director of UNICEF's Supply Division, said that the introduction of the vaccine is a significant step in saving children's lives and lowering the burden of malaria as part of the malaria preventive and control program. The vaccine could offer additional protection against malaria to approximately 25 million children each year in areas of more than 30 nations with moderate to high malaria transmission when the availability increases. It took 35 years of research and development to develop the RTS,S malaria vaccine, the first-ever vaccine against *Plasmodium falciparum*, the most dangerous malaria parasite in the world and most common in Africa.

As part of the WHO-led Malaria Vaccine Implementation Program, the pilot usage of the regular vaccine was started in Ghana, Kenya and Malawi in 2019. In October 2021, the WHO recommended the broad use of the first malaria vaccine in nations with moderate to high *P. falciparum* malaria transmission. This recommendation was based on the pilots' experiences and the data they produced. The door for a wider rollout of the vaccine was soon opened by Gavi, the Vaccine Alliance's decision to support the malaria vaccine program in qualifying nations in December 2021.

The afflicted nations are anticipated to have a high demand for the malaria vaccine. The initial supply will be limited; however, as manufacturing capacity rises to the required level, the supply will gradually enhance. (*Source: ETHealthWorld, August 17, 2022*)

CASE REPORT

Ischemic Stroke in Dengue Fever: Unusual Complication of a Common Disease

SONALI BANSAL*, SURABHI GUPTA†

ABSTRACT

Dengue fever is an arboviral infection, which is highly prevalent in tropical and subtropical climates. It is frequently associated with neurological complications but its association with ischemic stroke is ill defined. We present a case of an apparently healthy young male admitted with dengue fever complicated by ischemic infarct in corpus callosum. Our patient was managed conservatively, improved clinically and discharged in satisfactory condition.

Keywords: Dengue fever, neurological complications, ischemic stroke, infarct, corpus callosum

Dengue fever (DF) occurs frequently in tropical and subtropical countries worldwide, mostly in semi-urban and urban regions. It causes a wide-spectrum of disease ranging from subclinical illness to fatal dengue hemorrhagic fever and dengue shock syndrome. Neurological complications of dengue are attributed to: (1) viral neurotropism such as encephalitis, meningitis, etc.; (2) systemic complications such as stroke, encephalopathy; (3) post-viral immune-mediated acute disseminated encephalomyelitis, neuro-myelitis optica, Guillain-Barré syndrome, etc.[1]

We present a case of an apparently healthy young male admitted with severe dengue fever complicated by ischemic infarct involving splenium of corpus callosum.

CASE REPORT

A 22-year-old male presented to emergency with complaints of high-grade fever for 4 days associated with joint pains, nausea and generalized weakness.

On examination, patient had features of dehydration, dry lips and oral mucosa. He did not have any bleeding manifestations. His enzyme-linked immunosorbent assay (ELISA) for dengue virus antibody titers were 35.02 units (positive >11 units) and hemoglobin was 13.6 g%, total leukocyte count (TLC) 5800/mm^3, platelets of 40,000/mm^3. His serum glutamic-oxaloacetic transaminase/serum glutamic-pyruvic transaminase (SGOT/SGPT) levels were 2x the upper normal laboratory reference value.

Total bilirubin and international normalized ratio (INR) were normal. His acute phase reactants were elevated with C-reactive protein (CRP) being 17.2 mg/L and ferritin >16,500 ng/mL. His chest X-ray showed haziness in bilateral costophrenic angle consistent with pleural effusion. He was started on intravenous fluids and symptomatic treatment. The patient developed an episode of confusion with no focal neurological deficit on the next day.

In view of that, patient underwent magnetic resonance imaging (MRI) brain, which showed focal areas of acute diffusion restriction signal intensity in the splenium in the midline portion, appearing hyperintense on diffusion-weighted image (DWI)/T2/FLAIR (fluid-attenuated inversion recovery) images with a drop in signal intensity on apparent diffusion coefficient (ADC) mapping, findings consistent with acute ischemic infarct (Fig. 1). His 2D echocardiogram was normal with no left ventricular dysfunction or evidence of thrombi. His carotid duplex ultrasound was also normal. Conservative management was continued and his acute confusion state recovered subsequently.

On Day 7, his platelets increased to above 1 lakh/mm^3; liver enzymes, CRP and ferritin normalized. He was discharged in a satisfactory condition.

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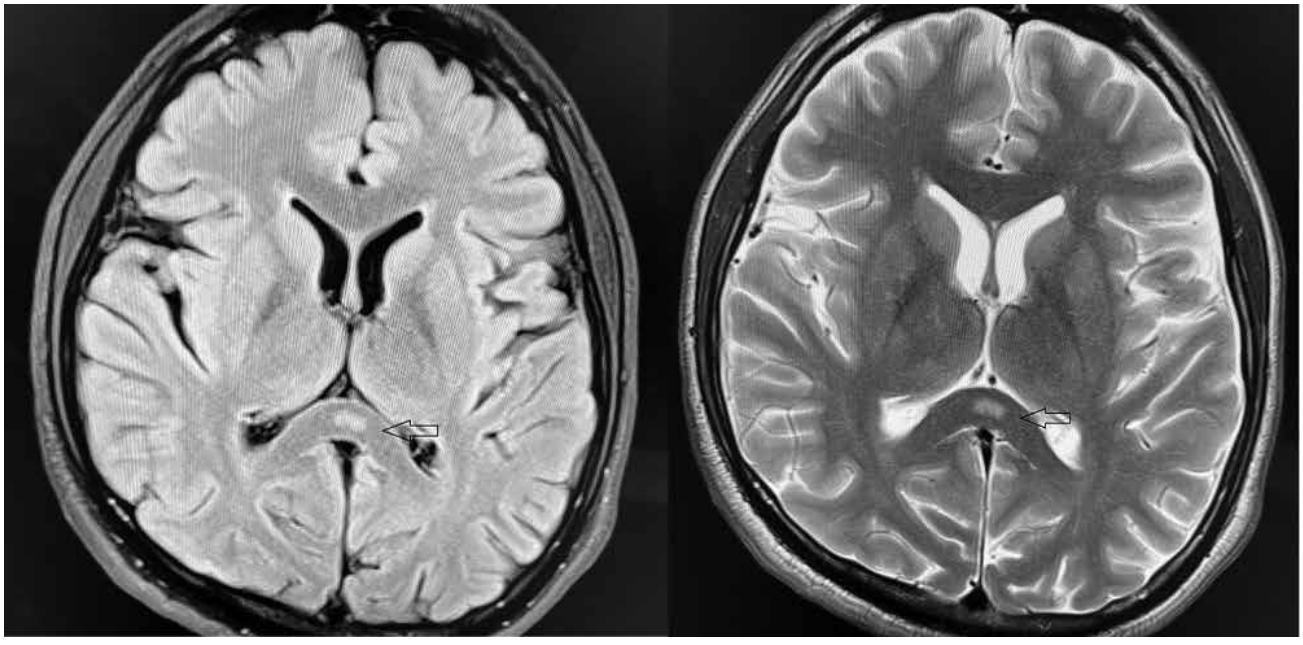

Figure 1. Focal areas of acute diffusion restriction signal intensity in the splenium in the midline portion (marked by *arrow*), appearing hyperintense on DWI image, findings consistent with acute ischemic infarct in splenium of corpus callosum.

DISCUSSION

Dengue viruses are transmitted in humans by female *Aedes* mosquitoes with *Aedes aegypti* being the most important vector in the tropical and subtropical regions. The virus has four antigenically similar serotypes (DENV 1-4). Dengue fever is endemic in 128 countries; most of them are developing nations, posing an annual threat to approximately 3.97 billion people.[2]

The exact incidence of various neurological complications is undetermined.[1] Encephalopathy and encephalitis are the most frequently reported neurological complications of dengue, with incidence found to vary between 0.5%[3] and 6.2%.[4] Verma et al evaluated 26 patients with neurological manifestation in dengue fever. No patient in their study had ischemic stroke.[5] Contrary to that Li et al concluded that, there is time-dependent increase in risk of stroke in dengue patients compared to control[6] and also reported more of ischemic stroke than hemorrhagic stroke suggesting possibility of underreporting of cases.

CONCLUSION

Our patient is a 22-year-old male with no comorbidities or risk factors for ischemic stroke. As his echocardiogram did not reveal any thrombus or ventricular dysfunction and carotid artery duplex imaging was normal, we presume that in this patient dengue fever is the probable cause for the infarction.

Ischemic stroke is an unusual manifestation in patients with dengue fever. One would expect thrombocytopenia-related acute haemorrhagic infarct to be present in such patients rather than ischemic infarct.

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CASE REPORT

Cocktail Inferno – Multiple Sclerosis with Type 2 Diabetes Mellitus in a Patient with Lepromatous Leprosy

SONIA JAIN*, PRIYANKA DATE†, NEERAJ DODKE‡

ABSTRACT

Co-occurrence of multiple sclerosis with type 2 diabetes mellitus with lepromatous leprosy is rare. We hereby report a case of multiple sclerosis with type 2 diabetes mellitus with lepromatous leprosy in a middle-aged female. She was clinically diagnosed as having multiple sclerosis with type 2 diabetes mellitus and presented with fever, ENL and neuritis. Her MRI reports were normal but she had a positive slit-skin smear and skin biopsy as lepromatous leprosy. Proceeding with this diagnosis, she was treated with baclofen for spastic bladder, antibiotics for urinary tract infection, oral hypoglycemic agents and oral steroids with multibacillary treatment for leprosy with type 2 reactions. She responded well and currently is being followed-up.

Keywords: Multiple sclerosis, leprosy, diabetes mellitus, demyelinating neuropathy

Multiple sclerosis is a disorder with heterogeneous clinical and pathologic features reflecting various pathways to tissue injury.[1] Inflammation, demyelination and axonal degeneration are the key pathologic mechanisms, which lead to clinical manifestations.[2,3] However, the cause of multiple sclerosis remains unknown.[4,5] The most widely accepted theory suggests that it begins as an inflammatory immune-mediated disorder characterized by autoreactive lymphocytes.[1,6] Later, the disease is dominated by microglial activation and chronic neurodegeneration.[2]

Leprosy (Hansen's disease) is an infectious disease caused by *Mycobacterium leprae* that involves the skin and peripheral nerves. Early diagnosis and a full course of treatment are critical for preventing lifelong neuropathy and disability.[7] Although the infection is highly responsive to treatment, leprosy became an important global health concern due to deformities and disabilities of the eyes, hands and feet secondary to neuropathy which are often irreversible and require lifelong care and rehabilitation. Therefore, early diagnosis and management are necessary to minimize the likelihood of these disabilities.[8]

Type 2 diabetes mellitus is characterized by hyperglycemia, insulin resistance and relative impairment in insulin secretion. It is a common disorder with a prevalence that rises markedly with increasing degrees of obesity.[9]

The prevalence of type 2 diabetes has risen alarmingly in the past decade,[10] in large part linked to the trends in obesity and sedentary lifestyle.[11]

CASE REPORT

A 55-year-old female was brought by her relatives to the skin department. She had flexor spasms, difficulty in walking, spastic bladder with an indwelling catheter since last 4 years and was diagnosed to have multiple sclerosis. She had multiple admissions for fever and urinary tract infection and was on oral hypoglycemic agents on regular basis. She presented with fever, multiple red-colored raised lesions (Erythema nodosum leprosum or ENL) all over the body (Fig. 1), with weakness, tingling and numbness over both upper and lower limbs. ENL were also present over her face

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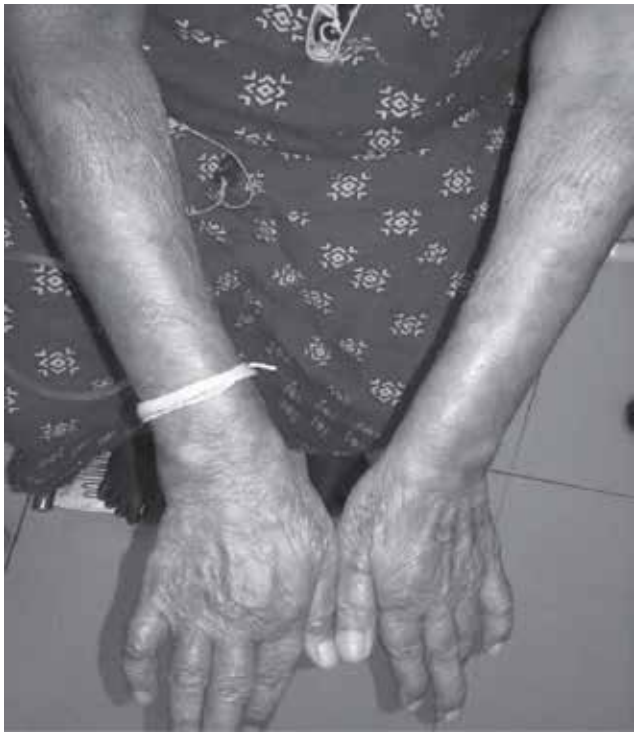

Figure 1. Multiple red-colored raised lesions (ENL) over body.

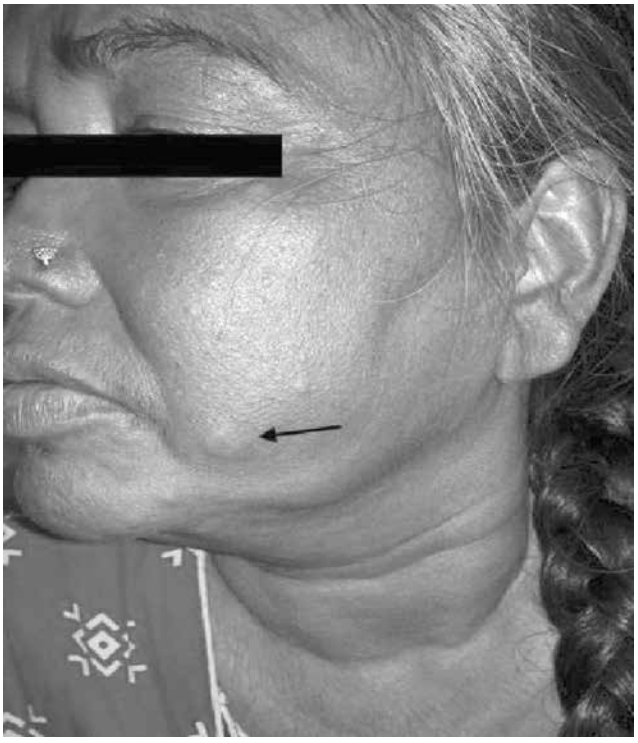

Figure 2. ENL present over face adjacent to angle of mouth (*arrow*).

adjacent to the angle of mouth (Fig. 2). Xerosis and ichthyosis characteristic of leprosy was visible over bilateral upper limbs (Fig. 3). There was no history of photosensitivity or any drug intake or application of any local irritant prior to the initial lesion.

Her detailed central nervous system evaluation revealed upper motor neuron type of paraparesis, sensorimotor with proximal as well as distal muscle involvement with urge incontinence suggestive of spastic type of neurogenic bladder. Her mental functions were intact with no cranial nerve involvement. Cardiovascular system, respiratory system and per abdominal evaluation was within normal limits.

Her routine blood biochemistry was normal except for low hemoglobin levels (5.9%), raised white blood cell (WBC) counts (15,800) and raised random blood sugar (RBS) levels (157 mg/dL). Urine analysis revealed urinary tract infection for which she was treated with antibiotics. Bladder care was given. She was treated with baclofen. Skin examination revealed positive slit-skin smear for acid-fast bacilli with bacteriological index of 3.5 and skin biopsy consistent with lepromatous leprosy. She was put on oral steroids for type 2 lepra reaction and multibacillary anti-leprosy treatment for leprosy. Appropriate oral hypoglycemic agents were continued as she was reluctant with insulin administration. Brain

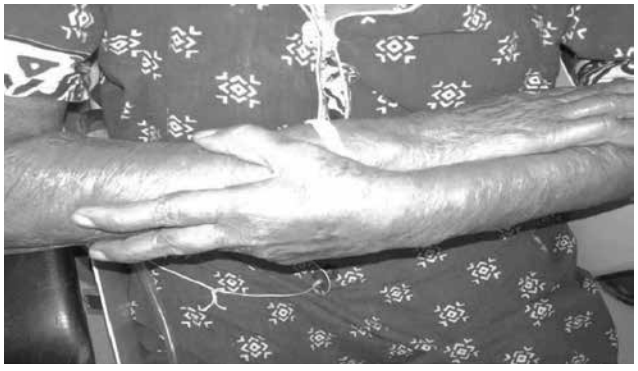

Figure 3. Xerosis and icthyosis visible over bilateral upper limbs.

imaging was normal. She responded well and her flexor spasms decreased. A psychiatric consultation was sought for her depression due to chronic illness and was started on antidepressants.

DISCUSSION

Dominant or recessive genetic mutations give rise to a number of inherited neuropathies. The basic pathology happens to be in the Schwann cells, the myelinating unit of the neuron leading to defective myelination, alteration of the axonal cytoskeleton and disruption of the axonal transport.[12] Genes involved in the axonal transport are the chief site of mutation in the majority

of inherited neuropathies leading to the atrophy of the axons and directly correlate with the clinical features in the inherited neuropathies.[12]

Diabetes mellitus is characterized by a number of sensorimotor and mixed neuropathies. The pathologic hallmark of neuropathies occurring in long-term diabetics involves the advanced glycation end products, persistent oxidative stress, polyol pathway flux and protein kinase C activation, ultimately contributing to microvascular disease and nerve dysfunction.[13]

Common symptoms of multiple sclerosis include sensory abnormalities including pain, motor symptoms due to involvement of the pyramidal tracts, visual disturbances, ataxia and Lhermitte sign. The pattern of abnormalities can vary from subtle limb weakness or sensory symptoms like Uhthoff phenomenon to more severe sensorimotor noncompressive myelopathies like acute transverse myelitis. Retrobulbar neuritis and optic neuritis have been the common causes of transient visual disturbances in multiple sclerosis. The onset is often polysymptomatic. Neuropathy is an early feature in Hansen's disease, as earliest diagnostic lesions are characterized by hypoesthesia.[14] Though early sensory loss is a common finding in leprosy, in some cases, patients can present with pain, which is often late in the course of the disease.[15,16]

In the tuberculoid spectrum of the Ridley-Jopling classification, neuropathy occurs in the proximity of the skin lesions, as against neuropathy in lepromatous disease, which is more generalized. Common nerves include the ulnar, median nerves (claw hand), the common peroneal nerve (foot drop), the posterior tibial nerve (claw toes and plantar insensitivity), the facial nerve (lagophthalmos), the radial cutaneous nerve, and the great auricular nerve. Subclinical neuropathy is found more commonly, as against it was previously believed in leprosy.

These results may have implications for the design of ErbB2 RTK-based therapies for both leprosy nerve damage and other demyelinating neurodegenerative diseases.[17]

Here we report this case as to the best of our knowledge, leprosy with multiple sclerosis has not been reported in literature.

CONCLUSION

Multiple sclerosis, Hansen's disease and diabetes mellitus are multisystem diseases with distinct etiologies affecting the sensory as well as motor nerve fibers. It is considerably rare to find a demyelinating, infectious and autoimmune disease of the nerves to coexist in the same patient. All these conditions can be managed simultaneously and successfully.

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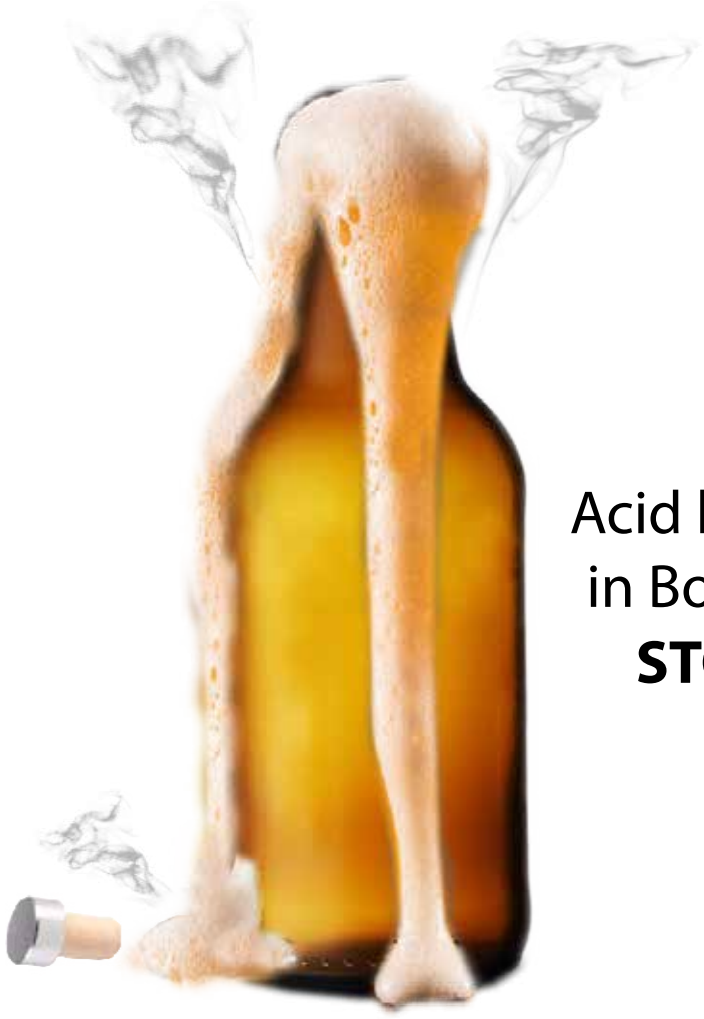

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CASE REPORT

Mosaic Variant of Turner Syndrome

ARCHIT GARG*, PARNEET KAUR†, RAMA GARG‡, ANJU GUPTA#, RENU¥

ABSTRACT

Turner syndrome is the most common chromosomal abnormality leading to gonadal failure and primary amenorrhea. While half of the cases have monosomy of chromosome X, the remaining exhibit mosaicism resulting in wide variation of phenotypic characteristics and clinical manifestations. We present a case of a 24-year-old female with mosaic variant Turner syndrome. The diagnosis was confirmed by karyotype analysis and laparoscopy.

Keywords: Turner syndrome, amenorrhea, karyotype analysis, laparoscopy

Turner syndrome is a genetic disorder that is characterized by complete or partial loss of one of the two X chromosomes in a phenotypic female. It was first described by Henry Turner in 1938. There is a wide variability of phenotypic features in a Turner syndrome patient due to the partial or complete monosomy of chromosome X, which is a result of chromosomal nondysjunction. Despite the variability, amenorrhea due to ovarian insufficiency and short stature is common to most of them. The phenotypic features exhibited by the non-mosaic 45,XO patient include short stature, webbed neck, shield chest, cubitus valgus, low hairline, short fourth metatarsal, etc. Apart from these, cardiac abnormalities like coarctation of aorta, renal abnormalities, ophthalmologic problems, sensorineural hearing loss and thyroid abnormalities are relatively common in them. In the mosaic variant of Turner syndrome, clinical manifestations may present to varying degree and sometimes the classical phenotypic features may be absent.

We present a case of mosaic variant Turner syndrome with primary amenorrhea due to ovarian insufficiency but no classical phenotypic characteristics.

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CASE REPORT

A 24-year-old female presented to the Gynecology OPD of Rajindra Hospital, Patiala with the chief complaint of failure to menstruate (primary amenorrhea). Patient explained that she was apparently well till 16 years of age when she went for gynecological consultation along with her mother for primary amenorrhea. According to her mother, they were told that the patient did not have a uterus as seen on ultrasound and were asked to consult a Gynecologist when the patient wanted to get married. So, the patient reported to Rajindra Hospital at 24 years of age with primary amenorrhea and absence of secondary sexual characters. The patient had no history of cyanosis, recurrent respiratory tract infection, cardiological problem or developmental delay. The patient had no other significant medical or surgical past history. There was no similar complaint in the family.

Suspecting Turner syndrome as the most likely cause of primary amenorrhea and absence of secondary sexual characters, we pursued our examination. On examination, patient had normal intelligence (she was a graduate). Her height and weight were 149 cm (4 feet 9 inch) and 36 kg, respectively. There was no low hairline, no low set ears, no webbed neck, no shielded chest, no cubitus valgus or genu valgum and no abnormality of nails or fingers. No abnormality was detected on thyroid gland palpation. The Tanner staging of breast was Stage 2 (breast buds present) (Fig. 1), while that for pubic hair was Stage 1 (sparse pubic hairs were present). Axillary hair were scanty. On auscultation, first and second heart sounds were normally heard and no murmur was audible. Abdomen on palpation was nontender and on local examination, urethral and vaginal openings were present. Labia

majora and minora were not well developed. Based on the examination, a provisional diagnosis of primary amenorrhea was made and further investigation and examination under anesthesia were planned.

Investigations were as under:

- Complete blood count (CBC) – Hemoglobin-11.7 g/dL, WBC-9,200/µL, platelet-4,15,000/µL, HCT-35.9%, MCV-75.6 fL, MCH-24.6 pg and MCHC-32.6 g/dL.
- Liver function test (LFT) – Total bilirubin-0.56 mg/dL, direct bilirubin-0.12 mg/dL, indirect bilirubin-0.44 mg/dL, serum glutamic oxaloacetic transaminase (SGOT)-39 IU/L, serum glutamic pyruvic transaminase (SGPT)-28 IU/L and serum alkaline phosphatase-67 IU/L.
- Renal function test (RFT) – Blood urea-18 mg% and serum creatinine-0.7 mg%.
- Fasting blood sugar (FBS) – 84 mg%.
- Thyroid profile – T3-1.53 ng/mL, T4-9.7 µg/dL and TSH-3.56 µIU/mL (normal).
- Luteinizing hormone (LH) – 12.6 mIU/mL.
- Serum prolactin (7.18 ng/mL) was normal.
- Follicle-stimulating hormone (FSH) (63.16 mIU/mL) was markedly elevated.
- Speech audiometry revealed normal hearing on right side and mild hearing loss on left side – 21.6 dB and 38.3 dB, respectively.
- Radiological investigations were carried out to determine the condition of the reproductive organs and any other organ involvement:
  - Ultrasound revealed that both the ovaries were present but the uterus was severely hypoplastic.

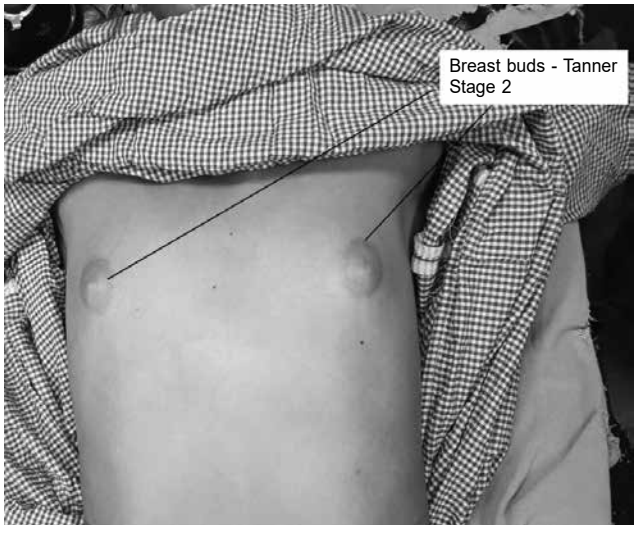

Figure 1. Breast buds - Tanner Stage 2.

  - Magnetic resonance imaging (MRI) further confirmed the uterus to be markedly small in size, 3 × 6 cm. Endometrium was thin-lined. Ovaries were normally visualized and no other pelvic/adnexal mass or free fluid in the pelvis was seen.
  - Ultrasound of whole abdomen showed no other organ abnormality.
- Echocardiography was normal.
- Chest X-ray revealed no abnormality.
- She was subjected to karyotyping which revealed two cell lines, that is, first cell line (25 cells examined) showed 45,XO (Fig. 2) while the second cell line (5 cells examined) showed 46,XX (Fig. 3).

This mosaic chromosome complement was consistent with the diagnosis of variant Turner syndrome.

Examination under anesthesia along with diagnostic laparoscopy was performed.

Per speculum examination showed a small-sized cervix with both anterior and posterior lips (Fig. 4).

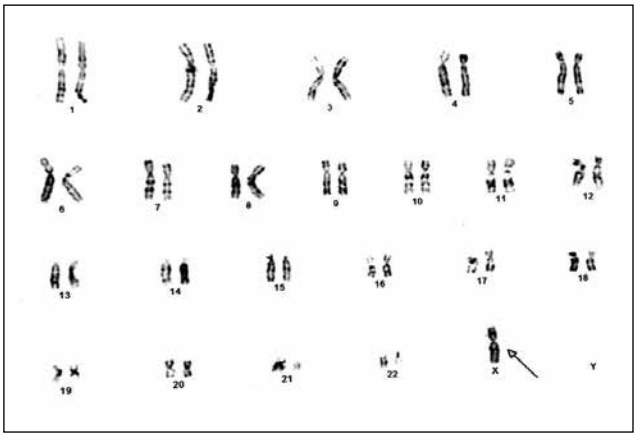

Figure 2. Karyotyping - 45,XO (25).

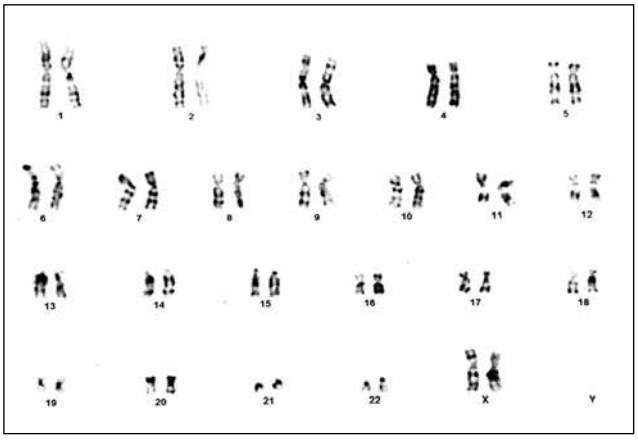

Figure 3. Karyotyping - 46,XX (5).

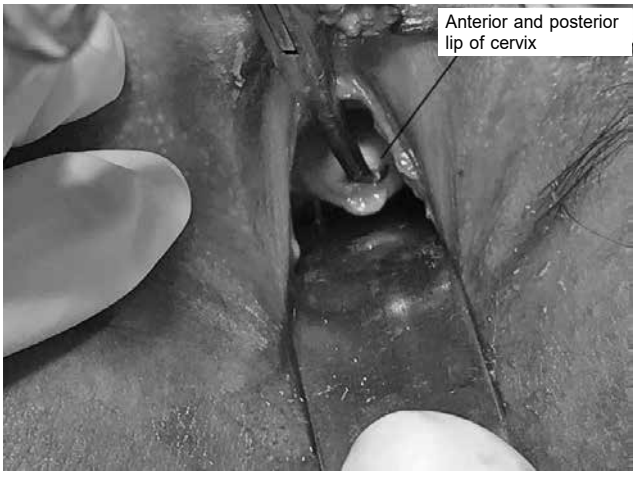

Figure 4. Per speculum examination - Note small size cervix with both anterior and posterior lips.

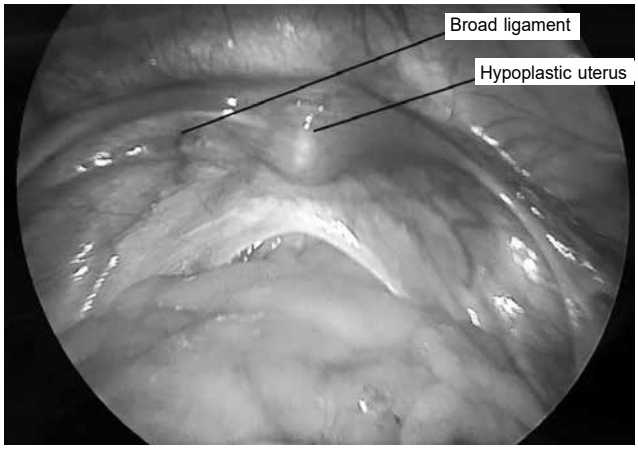

Figure 5. Diagnostic laparoscopy - Note hypoplastic uterus with broad ligaments.

Per vaginal examination – vagina admitted one finger and was 9 cm in length. Dimpling of external os was felt.

Uterine sound went inside the cervix up to 3 cm. Laparoscopy performed revealed small 3 × 2 cm sized mass at the site of uterus which was suspected to be the uterine body (Fig. 5). Uterosacral ligaments were appreciated. Fallopian tubes and ovaries could not be appreciated.

Based on the karyotype analysis and diagnostic laparoscopy, final diagnosis of mosaic Turner syndrome with gonadal dysgenesis was made.

The patient and her parents were counseled about this condition and the patient was discharged on hormonal therapy, vitamin D and calcium supplementation and the advice to undergo screening tests including echocardiography, audiometry, thyroid function test, LFT, RFT, lipid profile and complete hemogram on regular basis.

Patient is coming for regular follow-up. She is married now with normal sexual life.

DISCUSSION

Turner syndrome is one of the most common sex chromosome abnormality among the females. It affects 1 in 2,000 live born females. About 99% of Turner syndrome patients are spontaneously aborted, usually in the first trimester. More than 50% of the females with Turner syndrome have 45,XO or the non-mosaic karyotype. Many other karyotype variations including short or long arm deletion, ring X, isochromosome of long arm and mosaicism (cell lines of 45,XO and 46,XX) are also present. Short stature and gonadal insufficiency are the two clinical manifestations which are present in most of the cases irrespective of whether they are non-mosaic or mosaic variant of Turner syndrome.

Short stature is the most common reason for consultation to the doctor in the case of Turner syndrome, especially mosaic variants. The growth failure in this condition usually causes the adult female height to be about 20 cm below the average adult height of the female of that country and the average adult female height of our country is 152 cm. In our case, the patient's height was 149 cm, indicating that this phenotypic feature was not completely affected due to mosaicism which is different from the majority of the cases which have short stature.

The other phenotypic features consistent for Turner syndrome including webbed neck, low hairline, short fourth metatarsal, cubitus valgus, peripheral edema, etc., may be absent in the mosaic variant making it difficult to diagnose clinically. The other conditions like renal abnormalities (horseshoe-shaped kidney), cardiovascular abnormalities (coarctation of aorta), sensorineural hearing loss and thyroid abnormalities which are present in most of the non-mosaic patients may be absent in the mosaic variant. In our patient, none of these conditions was present.

Apart from these clinical features, gonadal insufficiency is usually present in most of the patients with Turner syndrome. It is due to early degeneration of the oocytes so that at birth only few oocytes are present and the ovaries look like fibrotic streaks. This gonadal failure is determined by raised FSH, ultrasound or diagnostic laparoscopy. In our patient, FSH was elevated and ovaries were not appreciated at all on diagnostic laparoscopy. Also, due to lack of estrogen production, secondary sexual characters like breast development, pubic hair growth, etc., do not develop.

Despite the fact that gonadal insufficiency is common in both mosaic and non-mosaic variants, some studies do indicate that normal puberty and spontaneous menarche occur more commonly in living mosaic variants (including those with some cell lines having 45,XO while others having 46,XX or 47,XXX or 46,XiXp) as compared to the non-mosaic (42-70% and 10%, respectively). Although these mosaic variants do conceive but there is increased risk of spontaneous abortions, stillbirths and congenital abnormalities.

A number of complications can develop in these patients as they grow old, including hypertension, cardiac complications (especially aortic root dissection), thyroid abnormalities, sensorineural hearing loss, increased risk of fractures due to osteoporosis and liver cirrhosis. Although these conditions are relatively more common and serious in the non-mosaic variant but all the Turner syndrome patients should be screened periodically for these conditions for timely diagnosis and thus decrease the morbidity and mortality associated with it. Apart from this, patients are given psychological supportand hormone therapy staring from adolescence and continuing till 50-60 years after which continuation of therapy depends on risk factors for developing complications like deep-vein thrombosis, cardiovascular complications, etc. So, a multidisciplinary team should carry out the management of girls with Turner syndrome right from diagnosis to adulthood.

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Pfizer Launches Phase 3 Trial for Lyme Disease Vaccine

Pfizer has begun a phase 3 clinical study to test its protein subunit vaccine candidate VLA15 for safety and efficacy against Lyme disease. The multicenter trial is being conducted in Europe and the US and will enroll around 6,000 healthy volunteers, both adults and children (≥5 years). The vaccine or saline placebo will be administered in three doses as primary vaccination and a booster dose after 1 year… (*Source: Medscape, Aug. 9, 2022*)

Quinary Prevention and Lower Segment Cesarean Section

BHARTI KALRA*, ANJALI SHARMA†, KAMLESH DHINGRA‡, SWATI AGRAWAL#

ABSTRACT

Lower segment cesarean section (LSCS) is a safe mode of delivery and has definite indications. However, at times, patients do not accept the advice to undergo elective or emergency LSCS, as appropriate. This leads to avoidable complications and cost. This communication discusses the style and salient features of counseling patients to understand and accept LSCS, as part of informed consent-taking. This discussion is geared towards obstetric care providers who encounter LSCS hesitancy in spite of having explained the indication(s) for surgery.

Keywords: Labor, delivery, consent taking, patient-centered care, obstetrics

Prevention of disease, and promotion of health, is an integral part of health care services. The concept of prevention has gained traction in recent decades, and various levels of prevention have been described in literature.[1]

Quinary prevention is defined as "Policies, conditions, actions and measures, that inhibit the emergence and establishment of processes and factors, that increase the risk of communication of inappropriate information, related to health, disease prevention or management, and/or that minimize the risks of communicating any such inappropriate information, hence minimizing the effect of such misinformation on the progression or development of disease at any stage during its natural history".[2]

A simpler definition of quinary prevention is as follows: "Means of preventing health-related hearsay or misinformation, or its ill effects on the health of individuals."[2]

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QUINARY PREVENTION IN OBSTETRICS

The framework of quinary prevention has been discussed in the context of chronic diseases,[3,4] but is equally applicable to acute health care settings. In obstetrics, we encounter many misconceptions, especially related to lower segment cesarean section (LSCS), its necessity, and its advantages. This leads to a situation of LSCS hesitancy,[5] where patients decline or delay consent for surgery. Lack of timely decision, and timely intervention, may have negative effects on the health of both mother and baby.

In this opinion piece, we list the various myths and misinformation related to LSCS as a mode of delivery and discuss how to tackle them. The quinary prevention framework improves patient provider communication and information sharing, thus enhancing the quality of obstetric care (Table 1).

While Table 1 is not exhaustive, we feel that it provides a comprehensive overview of the various myths that one may encounter during obstetric practice. Table 2 also shares a pragmatic way of dispelling these myths, in patients, and in the community at large.

SUMMARY

Quinary prevention encourages obstetric care providers to enquire regarding specific myths related to LSCS, and address them appropriately. The rubric that we share provides a framework to classify and address the confusion that surrounds LSCS. Handling these challenges is as much an integral part of obstetrics as

Table 1. Quinary Prevention and LSCS: Content of Communication

Myths regarding LSCS	Accurate information: quinary prevention
Related to necessity • LSCS is advised for financial reasons, not for health • LSCS is advised for the doctor's convenience • LSCS is advised because the doctor is unable to perform instrumental delivery	LSCS has clear cut indications, which can be classified as elective, emergent and urgent. These indications are based upon evidence and outcomes.
Related to safety • LSCS is associated with increased risk of adverse maternal outcomes • LSCS is associated with increased risk of adverse fetal outcome • LSCS leads to long-term maternal ill health, e.g., backache • LSCS leads to long-term ill health in the child	LSCS is an intervention which protects and promotes maternal, fetal and long-term health. Explain potential adverse outcomes of prolonged or difficult labor.
Related to tolerability • LSCS calls for long-term bed rest • LSCS doesn't allow the mother to breastfeed • LSCS doesn't allow one to plan the next pregnancy	With simple postoperative rehabilitation, the mother can resume normal activities. Breastfeeding is easily possible after LSCS.
Related to social desirability • LSCS means that the mother is "less feminine" than women who have had a normal vaginal delivery • LSCS means that the mother is "less strong" than women who have had a normal vaginal delivery	LSCS does not mean that one is "less feminine". Body self-image should not be linked to mode of delivery. Involve the husband while explaining the anatomy and physiology of parturition, as well as impact of prolonged or difficult labor on the female genital tract.
Related to affordability Post-LSCS maternal and newborn care is expensive	If planned during working hours, the cost of LSCS can be minimized. Timely LSCS reduces the cost of long-term care of mother and neonate. Discuss options regarding place of delivery.

Table 2. Quinary Prevention and LSCS: Communication Style

- Ask about concerns and complaints fears and feelings, doubts and distress. Acknowledge and appreciate the patient's point of view, and the efforts she has made to take care of her health.
- Accept her view point as being rational, and then offer an alternate viewpoint based upon scientific knowledge.
- Address and analyze the reasons behind these thoughts, beliefs and emotions.
- Articulate and repeat the information in a variety of words in the patient's language.
- Avoid argumentative or aggressive language, while continuing to engage the patient.
- Allow the discussion to continue at a later date or time, if appropriate.

conducting deliveries: both contribute equally to safe motherhood.

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Ensuring Optimal Screen Time in Children (0 to 11 Years): Hacks and Heuristics

MEENAKSHI VERMA*, SUNEET KUMAR VERMA†

ABSTRACT

Excessive screen time has emerged as a significant threat to child health. This communication lists various hacks and heuristics that can be used for children of varying age groups, to optimize their screen time. This information is useful for all health care professionals who manage children and/or counsel their patients.

Keywords: Child health, counseling, digital health, pediatric health, psychology, screen time

Imagine losing your phones for a day! Hasn't even the thought of it created a chaos in your mind already? So, why blame our young generation for feeling the same when they are denied access to their screens? Just think about it.

It's fortunate for us to be living in an era where materializing our thoughts is just a finger click away! The younger generation is not an exception though. They have equal rights to experience this magic wand called mobile phone. This is, in fact, the most inevitable invention of this modern era. Denying the children of this 'new normal' would only make the things worse. Moreover, the forceful digitalization of education during the COVID pandemic has strengthened this normality curve further.[1]

The need of the hour is to devise ways to let these screens turn into a helping tool in their overall development and at the same time to reinforce the incorporation of humanized real world intricacies. With the help of hacks and heuristics (summarized in Table 1), we can raise a child into a real human who has imbibed the technology driven development with that realistic touch we have ever wanted. However, children less than 2 years of age, need to be tackled with a perspective different from others, with regard to the screen use.

AGE GROUP 0 TO 2 YEARS

An infant is a naïve human body who is yet to acquire the basic life skills. Screens are increasingly being used by parents as a breather as they can keep the baby engaged for as long as needed; but the off-screen

Table 1. Hacks and Heuristics to Ensure Optimal Screen Time

Age group 0 to 2 years
- Zero screen time
- Read story books out loud
- Face-to-face interaction

Age group 2 to 7 years
- Timed and disciplined introduction of screen time
- Family screen rules
- Screen-free zones
- Separate screen routine
- Co-view, co-engage, co-play
- Pre-sleep ritual

Age group 7 to 11 years
- Screen time literacy
- Set an example
- Read books
- Partnership
- Parenting controls
- Probing
- Choose interactive content
- End time notifications
- Digital literacy

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experiences are definitely the mainstay for attaining basic social and cognitive skills. The world's leading brain scientist Patricia Kuhl had studied the brains of thousands of babies and inferred that the difference in learning from a machine and from a live human being is extraordinarily significant.[2] Perhaps this is why the World Health Organization (WHO) recommends no screen time for babies under 2.[3] At this age, screens hijack their attention span, divesting them of the essential stimuli from the outside world needed by their sensitive brains.

Instead of giving them screens to keep them engaged, we must devote our time in reading aloud stories to them. Their naïve brains would process the spoken words coming live from humans better than that from the on-screen images. Face-to-face interaction should replace the face to screen interaction. That's the only way an infant learns to understand non-verbal gestures. "Until babies develop language skill", says Charles Nelson, a Harvard Neuroscientist, "all communication is non-verbal, so they depend heavily on looking at a face and deriving meaning from that face. Is this person happy with me or is upset with me?"[4] This skill of reading human emotions cannot be acquired by exposure to screens. In spite of this knowledge, there are certain moments when relying on mobile become unavoidable, especially in today's age. Just make sure to control the content and make efforts to engage with them even while they are watching.

AGE GROUP 2 TO 7 YEARS

For children 2 years and above, most of the basic social and cognitive skills have already been attained. Introducing the screen at this time, in a timed and disciplined manner, can actually help them get well versed with the technological advances.[5] A balance however needs to be maintained between screen time and other activities to maintain a healthy lifestyle. Certain strategies need to be followed not only by the child but by the family as a whole.

Family screen rules must be abided by all the members of the family, especially until the child sleeps. Surpassing the set screen time of 1 hour daily must hold a punishable consequence for all. Certain *screen-free zones* at home, like the dining area, the bed, the play area, allow the child to understand the family values and the importance of face-to-face interactions. For that matter, displaying *screen-free zone* stickers at these areas inculcates a sense of compulsive discipline. One must avoid giving the control of gadgets entirely in hands of children because that would let them prematurely master the art of using and manipulating the gadgets, which can turn into a cognitive disaster for them. The screen timings should not be used as a reward for their good academic performance or for eating healthy food. No reward holds a better place in their lives than hugs and kisses for showcasing 'good manners'.

Setting a *separate screen routine* is recommended so as to avoid any cognitive association of screen with meal time or other daily routine activities in the mind of the child. The parents must *co-view, co-engage and co-play* with the child during this screen routine time to ensure their control over the content the child is being exposed to. Lastly, a *pre-sleep ritual* must be followed invariably every day, a time which must be reserved for the family fun together. Keep the hour prior to the designated sleep time reserved as a fun time together with your child, a no-screen time, a time of cuddling, sharing each other's day, performing light yoga, listening to music, playing a musical instrument, packing the school bag together, a time which the child would definitely look forward to daily.[6]

AGE GROUP 7 TO 11 YEARS

Now, this is the most crucial age during which a child is vulnerable to the technology trap. Apart from the above-mentioned strategies, the additional and the most effective way to prevent the same for children above 7 years of age is to *talk to your child.* Explain to your child the dangers of too much of screen time and keep reinforcing the same. He or she deserves to know why he or she is not being allowed to watch television or mobile for long. *Setting an example* yourself will convince them more to follow the suit. Children are great imitators, so give them something great to imitate. Manage your own screen time first. *Reading books* is another good alternative to keep their thoughts departed from the screens. There is nothing better than inculcating a habit of reading books yourself if that is what you want for your child.

Partnering, Parenting and Probing are the three interconnected P's you must apply while your child is watching mobile or television. Partnering with the child while he or she is playing a video game would increase their self-confidence. This would further strengthen your mutual trust. This would let you monitor the content and the type of game, thus, avoiding the existing online game traps. So, staying as a partner you can apply your parenting skills stealthily and can probe into the matter wherever required. It is mandatory to use *parental controls* to block and filter all

the inappropriate internet content. *Preview* each and every program, games and apps before allowing your child to view or play. *Choose interactive content or video games* that keep your child's minds active and engaged rather than those that just require swiping or staring the screen. Start giving *end time notifications* way before the actual end time so that the child gets prepared beforehand and the sudden switching off the screens doesn't create a fuss. Encourage *digital literacy*[7] by explaining to your child about the content you haven't approved or those without filters or about the suddenly popping up inappropriate advertisements. Explain to them with examples, various cyber-crime incidents that have happened.[8]

SUMMARY

Growing into a competent human being, capable enough to lead a successful life at par with the existing technology, has remained a constant goal for children of all times. Today's technology driven world demands an additional constitutional reform in terms of right to use the gadgets by children in an age appropriate manner and in accordance with the required developmental stage of the child.

The hacks and heuristics that we share in this article will go a long way in ensuring that this right is met, in a responsible manner.

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Study Reveals the Presence of 'Forever Chemicals' in Rainwater Making it Unsafe for Drinking

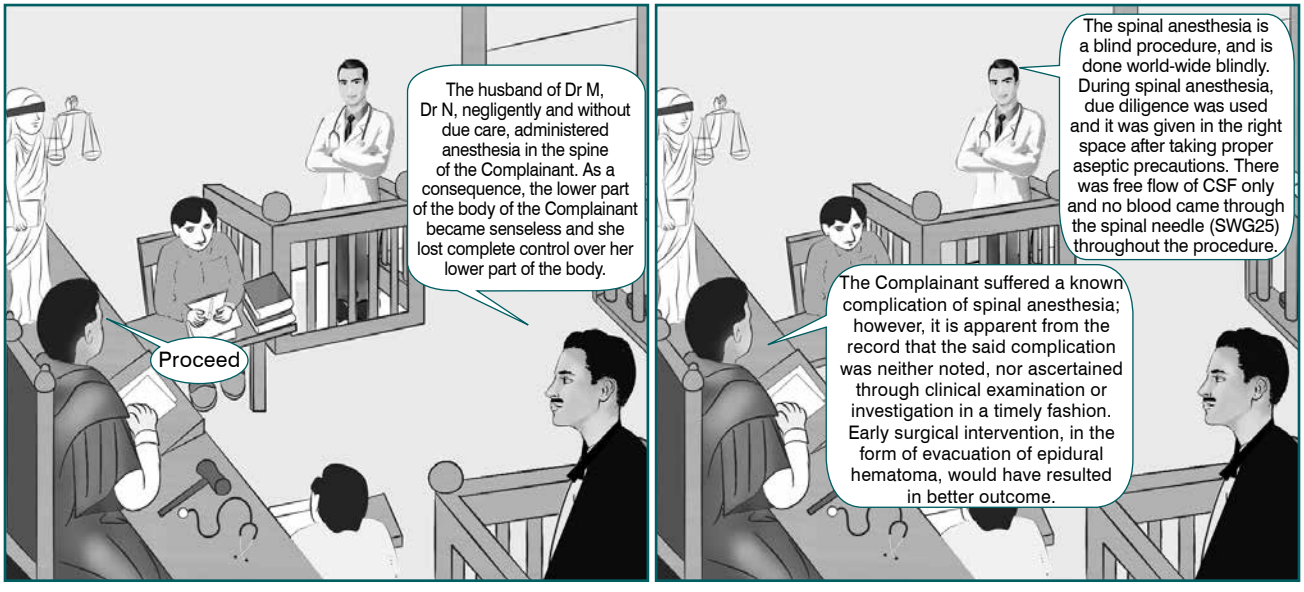
A recent study published in the journal *Environmental Science & Technology* claims that drinking rainwater is dangerous because of the presence of the "forever chemicals" in it.

Per- and polyfluoroalkyl substances, sometimes known as PFAS, are man-made compounds used in many industries, including food packaging and waterproof clothing. Researchers have discovered significant environmental contamination with PFAS. Because they can persist for a very long time, PFAS are referred to as "forever chemicals." These chemicals pollute the environment globally and have been detected in soil, rainwater, snow and even human blood. PFAS contamination has resulted in increased incidences of several diseases like cancer, infertility, pregnancy complications, challenges with children's learning and behavior, immune system abnormalities and elevated cholesterol.

In this study, the levels of four different perfluoroalkyl acids, including perfluorohexanesulfonic acid (PFHxS), perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS) and perfluorononanoic acid (PFNA), in various sources, such as rainwater, surface water and soil, were compared to global guidelines. The researchers found that the amounts of PFOA and PFOS in rainwater frequently "greatly exceed" European and American drinking water standards. PFAS now cycle naturally, frequently moving from seawater to marine air via sea spray particles.

The research team emphasized the need of taking quick action to stop additional harm and contamination, which would necessitate "a significant investment in advanced cleanup technology" and "rapidly prohibiting uses of PFAS wherever practicable." (*Source: Medscape, August 16, 2022*)

Failure to Timely Diagnose and Intervene in a Known Complication of a Procedure



Lesson: The Disciplinary Committee of the Delhi Medical Council (DMC) found that the Respondents failed to exercise reasonable degree of skill, knowledge and care, in the treatment administered to the Complainant, which was expected of an ordinary prudent doctor and recommended that names of the Respondents be removed from the State Medical Register of the DMC for a period of 15 days.

COURSE OF EVENTS

28.11.2008: The Complainant was admitted for delivery in Nursing Home A under Dr M, as she had been under her care during prenatal period. The Complainant was rushed into the operation theater on 28th November, 2008 in hurry by creating panic situation stating that the baby had passed stools.

ALLEGATIONS OF COMPLAINANT

In the operation theater, the husband of Dr M, Dr N, who is posted in a Government Hospital, negligently and without due care, administered anesthesia in the spine of the Complainant. As a consequence, the lower part of the body of the Complainant became senseless and she lost complete control over her lower part of the body.

The baby was delivered but the Complainant could not recover from the ailment caused to her on account of professional negligence on the part of Dr M and Dr N.

The Complainant was constrained to consult various experts to get herself examined and magnetic resonance imaging (MRI) report clearly shows that the anesthesia was wrongly administered leading to the said ailment, which completely immobilized the Complainant and she has been confined to bed for almost 2½ years. It was further alleged by the Complainant that Dr N is employed with Government Hospital and has been carrying out the private practice in unauthorized and illegal manner.

The Respondents did not render any medical help to the Complainant after she developed the above said problem on account of negligence on the part of the Respondents.

The Respondents did not disclose/inform the Complainant or her relatives regarding the nature of the ailment, which afflicted the Complainant after administration of said anesthesia.

The Respondents have neglected the Complainant and willfully committed an act of negligence, which has led to immobilization of the Complainant.

REJOINDER OF RESPONDENTS

Dr M, the Respondent stated that an absolute emergency and life-threatening condition for the Complainant had developed as the membranes had ruptured spontaneously and fetus had passed the stool (meconium) inside. There was immediate threat to the baby aspirating the meconium-stained liquor in mouth and lungs, which could have been fatal for the baby.

The anesthetist on the call was contacted telephonically and since he was busy in another operation and would be available after approximately 2 hours, another anesthetist was contacted but his mobile did not connect after repeated attempts.

It was only after failure to contact the anesthetist despite repeated attempts that Dr N was contacted in this emergency situation. On being apprised of the emergency situation and the danger to the baby, Dr N agreed with great reluctance only on moral and humanitarian grounds in the best interest of both, the Complainant and her to be born baby.

Dr N, the Respondent stated that the spinal anesthesia was given after taking due care and attention. During spinal anesthesia, due diligence was used and it was given in the right space after taking proper aseptic precautions. There was free flow of cerebrospinal fluid (CSF) only and no blood came through the spinal needle (SWG25) throughout the procedure. As for the loss of control over the lower part of the body is concerned, it is an unfortunate and an isolated incident for which they cannot be blamed.

The Respondents arranged for the urgent and immediate MRI themselves, as soon as they noticed the complication. The MRI scan showed epidural hematoma and spina bifida. The spina bifida is a congenital anatomical defect about which the Complainant did not tell them. The presence of such defect in the spine cannot be ascertained beforehand, before giving spinal anesthesia especially in pregnant women or before starting surgery. They cannot be blamed for such congenital defect in the spine.

MRI report also does not mention about any neurological damage committed during the anesthesia procedure. The epidural hematoma in the MRI scan could not be due to the abnormal arterial venous plexus/arteriovenous malformations present in the epidural space. The spinal anesthesia is a blind procedure, and is done world-wide blindly.

OBSERVATIONS OF DMC

The spinal anesthesia is a blind procedure. The Complainant suffered a known complication of spinal anesthesia; however, it is apparent from the record that the said complication was neither noted, nor ascertained through clinical examination or investigation in a timely fashion. The Complainant was administered spinal anesthesia for purposes of delivery on 28th November, 2008. Postoperatively, the Complainant lost complete control over her lower part of the body and complained of acute pain in the spinal region which was attributed to normal pain associated with the procedure and was managed by administering injection voveran, a painkiller.

As per literature, maximum chances of recovery in epidural hematoma (post spinal anesthesia) are within first 8 to 10 hours of injury, a time period which had already elapsed prior to her neurological consultation. It was only on 29th November, 2008 in the morning that the spinal complication was noted and neurological consultation was sought.

The treating team failed to assess the gravity of the clinical condition of the Complainant. When the Complainant was diagnosed as having neurological deficit on 29th morning, it would have been desirable to get an urgent MRI, which would have assisted in confirming the diagnosis and prompted an early surgical intervention in the form of evacuation of epidural hematoma, which would have resulted in better outcome.

As regards, the conduct of Dr N of indulging in private practice, in spite of being in Government service needs to be looked into by the Government.

ORDER OF DMC

In light of the observation made hereinabove, it was the decision of the Disciplinary Committee that the treating team of Dr M and Dr N failed to exercise reasonable degree of skill, knowledge and care in the treatment administered to the Complainant, which was expected of an ordinary prudent doctor. The Disciplinary Committee, therefore, recommended that names of Dr M and Dr N be removed from the State Medical Register of the DMC for a period of 15 days.

REFERENCE

1. DMC/DC/F.14/Comp.881/2013/ Dated 23rd July, 2014.

■■■■

HCFI Dr KK Aggarwal Research Fund

Coronavirus Updates

CDC updates its COVID-19 isolation guidelines

The Centers for Disease Control and Prevention (CDC) recommends wearing a high-quality mask for 10 days upon exposure to coronavirus disease 2019 (COVID-19) and to get tested on day 5 rather than quarantining. In its updated guidance, the CDC advises isolation if sick and suspect COVID-19, even though not lab-confirmed. Upon testing positive, the person should isolate for a minimum period of 5 days and avoid contact with persons at high risk until day 11. If the symptoms worsen after the isolation is complete, CDC says to begin isolation again from day 0. It continues to advocate completing the vaccination schedule… (*Source: CDC, Aug. 11, 2022*)

FDA guidelines for COVID-19 home testing

In a safety communication, the Food and Drug Administration (FDA) says that those who test negative with the home COVID-19 antigen test should repeat the test regardless of the presence of symptoms to avoid a false negative result. Repeat the test after 48 hours if symptoms are present; do such two tests. If no symptoms, but COVID-19 is suspected, repeat the test after 48 hours of the first negative test and again 48 hours after the second negative test for three tests… (*Source: US FDA, Aug. 11, 2022*)

COVID-19 vaccine safe for pregnant women, says study

It is safe for pregnant women to take the Pfizer and Moderna mRNA vaccine, says a Canadian study published in *The Lancet Infectious Diseases* conducted by the Canadian National Vaccine Safety Network.

The likelihood of experiencing a significant health event requiring consultation with a doctor, miss work, was lower in pregnant women compared to nonpregnant vaccinated women of the same age group within 1 week of receiving the first dose; 4.0% vs. 6.3%, respectively. After the second dose, this rate was 7.3% vs. 11.3%, respectively. Feeling unwell or malaise or myalgia, headache/migraine and respiratory tract infection were the most commonly occurring significant health events… (*Source: The Lancet Infectious Diseases, Aug. 11, 2022*)

Prolonged recovery in children with MIS-C

A study of patients from 25 children's hospitals has found that 27% of children and adolescents who had COVID-19 in the early phase of the pandemic continued to have some symptoms 2 to 4 months after being hospitalized with COVID-19. And, 30% of children with multisystem inflammatory syndrome in children (MIS-C) also had persistent symptoms. Fatigue/weakness was the most common symptom followed by difficulty in breathing, cough, headache, myalgia, body ache and fever. Children with MIS-C experienced more activity impairment post-illness compared to those with acute COVID-19 (21.3% vs. 14.3%, respectively)… (*Source: Pediatrics, Aug. 12, 2022*)

UK is the first country to approve the bivalent booster COVID-19 vaccine

The UK has become the first country to approve a bivalent booster vaccine for adults, which is an updated version of Moderna's mRNA COVID-19 vaccine. About half (25 μg) of the Spikevax bivalent Original/Omicron vaccine contains the original 2020 virus strain and the remaining half (25 μg) consists of the Omicron (BA.1) variant… (*Source: Medicines and Healthcare products Regulatory Agency, Aug. 15, 2022*)

suPAR: A new marker to predict incident VTE risk in COVID-19 patients

A recent study in the *Journal of the American Heart Association* has identified soluble urokinase plasminogen activator receptor (suPAR) as another marker to predict the risk of venous thromboembolism (VTE) in COVID-19 patients who have low D-dimer levels. The levels of suPAR were raised by 50% in patients who developed thromboembolism compared to those who did not. About 41% of patients were identified as low risk for VTE when both D-dimer (<1 mg/L) and suPAR (<11 ng/mL) were combined… (*Source: Medscape, Aug. 16, 2022*)

New guidelines for administration of convalescent plasma

New guidelines on convalescent plasma from the Association for the Advancement of Blood and Biotherapies (AABB) strongly recommend against transfusion of COVID-19 convalescent plasma for unselected inpatients with moderate or severe disease.

Exceptions are individuals who lack antibodies against the virus or immunocompromised patients. Outpatients at risk of severe disease should be administered the plasma along with the standard treatment. The complete guidelines are published in the *Annals of Internal Medicine*… (*Source: Medscape, Aug. 16, 2022*)

No benefits from metformin, ivermectin or fluvoxamine in high risk COVID-19 patients

The phase III COVID-OUT trial has failed to demonstrate any benefits of metformin, ivermectin or fluvoxamine administered as early outpatient treatment in preventing hypoxia, emergency visit, hospitalization or COVID-related mortality in high-risk patients with overweight and obesity… (*Source: NEJM, Aug. 18, 2022*)

New weekly COVID cases are declining, says who

In its latest Weekly epidemiological update on COVID-19, the World Health Organization (WHO) has reported a decrease of 9% in new weekly cases in the week from 15th August to 21st August, 2022 compared to the preceding week. The number of new cases was over 5.3 million. Weekly deaths also declined by 15% with more than 14,000 deaths. The maximum rise in new weekly cases (14,76,374) was seen in Japan, where cases increased by 6% followed by the Republic of Korea with 8,84,373 new cases (+2%), the United States with 6,12,378 new cases (–13%), Germany with 2,40,998 new cases (–19%) and the Russian Federation with 2,35,385 new cases (+39%)… (*Source: WHO Weekly Update, Aug. 24, 2022*)

BA.5 Omicron sublineage is the dominant strain globally

The Omicron variant of concern (VOC) continues to the dominant severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) strain globally, according to the WHO in the month from 22nd July to 22nd August, 2022. The BA.5 is the dominant Omicron sublineage with a rise in prevalence from 71% to 74%. The BA.5.1 and BA.5.2 are rising in prevalence as is BF.7 (BA.5.2.1.7) descendent lineage. The BA.2 and BA.4 descendent lineages are however showing a decline… (*Source: WHO Weekly Update, Aug. 24, 2022*)

Japan may no longer require predeparture COVID test for vaccinated travelers

Japan may soon ease its traveling restrictions for vaccinated (three doses) individuals. It is considering waiving the requirement of a negative COVID-19 test 72 hours prior to the departure from September 7. However, the restrictions on the number of travelers permitted entry into the country will continue. Japan is currently in the midst of the seventh wave of COVID-19 mainly due to the BA.4 and BA.5 variants… (*Source: Medscape, Aug. 24, 2022*)

Moderna applies for EUA for its updated COVID booster vaccine

Moderna has applied for EUA for its bivalent COVID-19 booster vaccine for individuals aged 18 years and older. Besides the original virus strain, the updated version also acts against BA.4 and BA.5 Omicron variants. The doses may be available next month, says Moderna… (*Source: Medscape, Aug. 24, 2022*)

Masks to be mandatory only on public transport and high-risk places in Singapore

From 29th August, for the first time, Singapore will no longer require people to wear masks indoors. Now, masks will be mandatory only in high-risk settings like health care facilities and on public transport. Another change in the COVID measures is that unvaccinated travelers will not be required to undergo a 7-day quarantine. More than 90% of the people in the country have been vaccinated… (*Source: Medscape, Aug. 24, 2022*)

CDC recommends Novavax COVID vaccine for adolescents

The CDC has recommended the Novavax COVID-19 vaccine for primary vaccination for adolescents aged 12 to 17 years, following the EUA issued by the FDA widening the options available. The Novavax is a protein subunit vaccine… (*Source: CDC, Aug. 22, 2022*)

Pfizer to test the effect of second course of Paxlovid in rebound patients

Following reports of rebound infection after the first course of Paxlovid, the US FDA has asked Pfizer to examine the effect of a second course of Paxlovid in persons who experience a COVID-19 rebound. The preliminary results of the randomized controlled trial are expected to be available by end of September next year. A study protocol, in tandem with the FDA, may be finalized soon, according to Pfizer… (*Source: Medscape, Aug. 22, 2022*)

"More transmissible and more dangerous" COVID variants may appear, says WHO

In a media briefing earlier this week, the WHO has warned about a rise in COVID-19 cases in the approaching winter season, even though now the deaths are decreasing worldwide. Dr Tedros A Ghebreyesus, WHO Director-General said, "Subvariants of Omicron are more transmissible than their predecessors, and the

risk of even more transmissible and more dangerous variants remains." He also expressed concern about the low vaccine uptake in high-risk people, including the unvaccinated health care workers and elderly population. Cautioned must still be exercised… (*Source: WHO, Aug. 31, 2022*)

Updated bivalent COVID-19 booster vaccines

Following FDA authorization of the Moderna and Pfizer bivalent COVID-19 booster vaccine as single booster dose, the CDC Advisory Committee on Immunization Practices' (ACIP) has also recommended the Pfizer updated booster for individuals aged 12 years and older and Moderna for persons aged 18 years and older. Besides the current vaccine components, the updated boosters contain BA.4 and BA.5 spike protein… (*Source: CDC, Sept. 1, 2022*).

Over 200 crore vaccine doses administered in India

COVID-19 cases continue to show a declining trend in India. There were 6,168 new cases in the last 24 hours. The active cases are now less than 60,000. The current recovery rate is 98.68%. The 7-day positivity rate is 2.51%. So far, over 200 crore total vaccine doses have been administered, including 94.29 crore second dose and 16.15 crore precaution dose… (*Source: Press Information Bureau, Sept. 2, 2022*)

Asymptomatic COVID-19 patients can now end their isolation but with a mask in Ontario

Ontario in Canada has allowed COVID-19 patients to end their isolation 24 hours after they become asymptomatic but they have to use a mask. Such asymptomatic patients, who are still COVID-positive, including their close contacts, can also go to work or attend school, but wearing a face mask for 10 days is compulsory. However, they cannot visit high-risk settings such as hospitals and long-term care facilities… (*Source: Medscape, Sept. 1, 2022*)

With inputs from Dr Monica Vasudev

Minutes of an International Weekly Meeting Held by HCFI Dr KK Aggarwal Research Fund

Topic: COVID-19 Update from National Medical Association

August 20, 2022 (Saturday, 9.30 am - 10 am)

- In Singapore, private sector hospitals are fully occupied and there is a long waiting list for admissions to hospital. There is a similar problem in public sector hospitals too. Patients often stay in emergency unit for up to 72 hours and sometimes are often discharged from the emergency unit itself. The elderly population has been deconditioned, both physically and mentally, over the 2 years of the pandemic.
- The problems being faced are a huge deluge of backlog of cases and shortage of nurses. They have either resigned to take a break as they have not seen their families for more than 2 years or moved to countries like the UK, US, Australia and New Zealand, where they have been offered green cards/permanent residencies and are allowed to bring their families along. This was not allowed in Singapore. A large cluster of tuberculosis (TB) was detected in an entire block of flats, where at least 70 to 80 people tested positive for TB. The whole apartment block was sealed off.
- There are no infectious disease wards in Pakistan in any public sector hospitals. The PMA has advised the government that such wards should be permanently established to manage infectious diseases other than COVID-19. Like many countries, Pakistan too has been facing economic burden since the pandemic. There is a staff shortage because of brain drain. Also, there are very few schools/universities for nurses and other paramedical staff. This is also a reason for less staff in hospitals. Security is also a concern, especially in rural areas.
- South Africa is also facing problems such as price hike, escalating petrol prices, staff shortage, drug stock-outs, broken equipment, shortage of doctors who have left for countries like Ireland, UK, Canada. These critical problems are not being addressed. The government is facing a funding issue and there is insufficient budget to recruit more doctors and nurses. Private hospitals are full with patients of chronic diseases. COVID-19 disrupted the follow-up of chronic disease such as TB and now patients are coming back with advanced disease. Infections such as flu, respiratory syncytial virus (RSV) are rising as most people now do not wear masks. The winter season and rains have added to the problem. Flooding has led to rise in water-borne diseases.
- COVID-19 has pushed back all other diseases, which are now coming back in a fast and furious manner.
- There are several aspects of COVID-19, which are still unknown to us. But it has had a tremendous effect on the immune system, though the extent of its impact is uncertain.

- People across the world have gone through lot of stress in the last couple of years due to loss of freedom, travel, livelihood; many lost their families. This is difficult to quantify. As a result, many people, including health care workers, have quit their jobs.
- Several challenges are still left over from COVID-19. Chronic diseases are not well taken care of and surveillance for many ongoing infectious diseases is being curtailed.

Participants – Member National Medical Associations: Dr Yeh Woei Chong, Singapore, Chair of Council-CMAAO; Dr Wasiq Qazi, Pakistan, President-elect, CMAAO; Dr Mvuyisi Mzukwa, South Africa; Dr Akhtar Hussain, South Africa; Dr Salma Kundi, Pakistan; Dr Mulazim Hussain Bukhari, Pakistan

Invitees: Dr EC Ng; Dr Patricia La'Brooy; Dr S Sharma, Editor-IJCP Group

Moderator: Mr Saurabh Aggarwal

Updates in Medicine

Biomarkers to predict post head injury outcomes

Measuring the levels of glial fibrillary acidic protein (GFAP) and ubiquitin carboxy-terminal hydrolase L1 (UCH-L1) on the day that the traumatic brain injury (TBI) occurred can portend the risk of severe disability or mortality within 6 months. GFAP and UCH-Li has been FDA approved as indicator of CT scan head post head injury… (*Source: NIH, Aug. 10, 2022*)

Beneficial effects of monoclonal antibody in asthma

In the NIH MUPPITS-2 study published in *The Lancet*, mepolizumab, a monoclonal antibody, reduced the incidence of asthma episodes by 27% in children and adolescents with difficult to control asthma, high eosinophil. Mepolizumab is FDA approved for children aged ≥6 years with eosinophilic asthma… (*Source: NIH, Aug. 10, 2022*)

Baloxavir gets FDA nod to treat young children for flu

The first drug - baloxavir marboxil - for the treatment of influenza in children aged 5 to 12 years has been given the go ahead by the US FDA as single dose. Baloxavir is already approved for treatment of flu for individuals aged 12 years and older, including treatment of people at risk of flu-related complications... (*Source: Medscape, Aug. 12, 2022*).

Leaving small kidney stones increases risk of relapse

Removal of the small asymptomatic renal stones simultaneously with ureteral or contralateral kidney stones reduces the likelihood of these seemingly trivial stones becoming symptomatic. At the same time, it decreases the frequency of visits to the emergency department compared to leaving them… (*Source: N Engl J Med, Aug. 10, 2022*)

Early institution of physiotherapy for low backache reduces specialist visits

Starting physiotherapy early in patients with acute low back pain reduced the need for imaging and specialist physician visits within 1 month of the first visit and a year later in comparison to patients who did not receive early physiotherapy, according to a study in *BMC Health Services Research*. They were also less likely to visit a pain specialist or a chiropractor… (*Source: Medscape, Aug. 11, 2022*)

FDA issues EUA for intradermal Jynneos vaccine for monkeypox

The US FDA has granted emergency use authorization (EUA) for the Jynneos, the Modified Vaccinia Ankara (MVA) vaccine, for adults aged ≥18 years at high risk for monkeypox infection. The vaccine is generally given in two doses subcutaneously at a gap of 28 days for smallpox and monkeypox. The FDA has now allowed fraction of the dose for intradermal administration to increase the available doses, but retains the effectiveness…. (*Source: US FDA, Aug. 9, 2022*)

Time-restricted eating encourages weight loss

A new 14-week study of 90 people with obesity in *JAMA Internal Medicine* says that time-restricted eating for 8 hours from 7 am to 3 pm reduced body weight more effectively than eating for ≥12 hours; −6.3 kg vs. −4.0 kg, respectively. It also reduced the diastolic blood pressure. However, long-term studies are needed to assess its effectiveness in lowering body fat… (*Source: JAMA Internal Medicine, Aug. 8, 2022*)

Evaluate all patients with acute anterior uveitis for musculoskeletal symptoms

Patients with acute anterior uveitis often have high prevalence of undiagnosed coexistent spondyloarthritis. More than half (56%) of the patients with acute anterior uveitis were found to also have spondyloarthritis. In 70% of patients, it was detected during the study. Presence of psoriasis, HLA-B27 positivity, raised C-reactive protein and male genders were factors that had a positive association with diagnosis of spondyloarthritis… (*Source: Arthritis & Rheumatology, July 29, 2022*)

With inputs from Dr Monica Vasudev

AIOC 2022: 80th Annual Conference of All India Ophthalmological Society

SUBLUXATED CATARACT MANAGEMENT DURING PHACOEMULSIFICATION

Dr Rajiv Choudhary, Indore

- Surgical management of cataracts associated with zonular dialysis.
- The causes are traumatic, systemic associations, spontaneous and hereditary.
- With recent advances in equipment and instrumentation and a better understanding of fluidics, cataract surgery is safe even in subluxated cataracts.

UNDER PRESSURE! INTRAOCULAR PRESSURE AND INTRAVITREAL ANTI-VEGF INJECTIONS

Dr Nitin Verma, Tasmania, Australia

- Intravitreal injections (IVIs) can cause serious acute and chronic intraocular pressure (IOP) changes in susceptible eyes.
- IVI causes structural changes in the eye.
- The treating physician should keep this in mind as untreated IOP rise can cause damage to the retinal fiber layer.
- Susceptible patients may require closer monitoring and/or earlier consideration of procedural management.
- Challenge: Identifying and monitoring susceptible patients.

GLUE AND DALK IN MICROBIAL KERATITIS

Dr Rajesh Fogla, Hyderabad

Cyanoacrylate glue (isobutyl/isoamyl cyanoacrylate) is used in medical procedures either to close incisions and lacerations without the use of sutures or as an adjunct to strengthen the suturing. This use is possible because it is a bactericidal liquid monomer that, in the presence of small amounts of moisture, rapidly polymerizes to form a strong adhesive.

Therapeutic keratoplasty is necessary when there is no response to maximal medical therapy, rapid progression of infection or tectonic integrity of the eye is compromised (impending perforation or perforation).

Early deep anterior lamellar keratoplasty for fungal keratitis was shown to be poorly responsive to medical treatment.

THE ENCIRCLING SCLERAL BUCKLE

Dr Andrew W Eller, Pittsburgh, US

Three principles of retinal detachment repair

- Localization of the retinal break
- Release the vitreoretinal traction
- Create a chorioretinal adhesion

When do you use an encircling scleral buckle?

- Fast
- Does not require precise localization
- In skilled hands, low-risk
- Inexpensive

The mechanism of a buckle

- Reduces vitreous traction
- Intraocular fluid currents

The surgical technique to apply band

- Selection of encircling element: 240, 41, 42, 4050
- Place approximately 3 mm posterior to muscle insertion
- Belt loops vs. sutures
- Watzke sleeve vs. clove hitch (nylon vs. mersilene vs. polydioxanone)
- Tension-adjust on the pressurized eye to make a "happy band"

POST REFRACTIVE SURGERY SITUATIONS – IOL POWER CALCULATION SIMPLIFIED

Dr Suven Bhattacharjee, Kolkata

- The problems associated with keratometry include laser vision correction (LVC) and radial keratotomy (RK).
- Post-LVC keratometry – directly measure both anterior and posterior corneal curvature and thereby calculate the net corneal power.

- Post-RK eyes – True corneal power can only be estimated by taking into account the small effective optical zone and postoperative hyperopic shift.
- K-reading solutions: *Corneal topography* – the central corneal power, simulated keratometry (SimK) within 1, 2 and 3 mm depending on the instrument. More accurate evaluation of any pre-existing astigmatism; *Scheimpflug photography; Optical coherence tomography (OCT)* – can measure the anterior and posterior corneal powers. The high axial resolution of OCT allows a clear delineation of corneal boundaries.
- The Barrett Suite is a combination of 5 formulas: Barrett Universal II, Barrett Toric, Barrett True K, Barrett TK Universal II and Barrett TK Toric.

MSICS – A MYRIAD OF VARIATIONS

Dr Purvi Bhagat, Ahmedabad

- Important to study and apply variability in techniques.
- Help surgeons learn and perform better.
- Develop manual small-incision cataract surgery (MSICS) training programs accordingly.

WHEN TO AVOID PREMIUM IOLS?

Dr JS Titiyal, New Delhi

- Multifocal intraocular lenses (IOLs) can provide excellent uncorrected visual acuity at all distances. Photic phenomena such as glare and halos are inherent to these lenses.
- Preoperative patient counseling, careful case selection and individualized weighing of benefits and side effects are important.
- Accurate biometry and IOL power calculation are crucial for optimal outcomes.

HOW TO OPERATE A HARD CATARACT?

Dr Harbansh Lal, New Delhi

- Settings and phaco tip.
- Incision-as posterior as possible without cutting the conjunctiva to avoid chemosis.
- CCC-larger particularly nasal and left side for a right-handed surgeon. No hydro initially.
- Wide and deep trench energy used causes no collateral damage.
- Use a high vacuum to hold and do radial rotational split.
- Divide the nucleus into small pieces. Each heminucleus – 4 to 5 pieces.
- Initially long chopper. Away from cornea/viscoat.
- The last fragment – Visco in AC, change chopper, lower the parameters.

SIMULATION TRAINING FOR SICS

Dr Kimaya V Chavan, Mumbai

The HelpMeSee Simulator is the only manual SICS simulator available in the field. It has high fidelity, 3D virtual reality with tactile feedback, and intuitive simulation software.

Advantages of simulation-based surgical training

- Insufficient surgical training during COVID times
- To learn better handling of instruments
- To achieve perfection in a particular step
- Shorten the learning curve
- Reduce surgical complications
- To practice management of complications.

NUCLEUS MANAGEMENT IN THE PRESENCE OF PCR

Dr Anurag Mishra, Cuttack

- **2 Mantras:** The nucleus fragments are not absorbable; Vocal cords put to rest.
- **2 Essential Inclusions in the Inventory:** Dispersive OVD (chondroitin); Multiple IOLs.
- **2 Points to Ponder:** Early recognition/prevent extension; Nucleus emulsification.

NONINFECTIOUS KERATITIS OR WHAT IS WRONG WITH THIS PICTURE?

Dr Sonal Tuli, Gainesville, FL

Exposure keratopathy

- Inferior location
- Minimal discharge
- Whitening around ulceration
- Discomfort and tearing present

Management

- Ointment at night
- Gold weight
- Eyelid surgery if cicatricial
- Tarsorrhaphy
- Moisture goggles

- Bandage contact lens (BCL)
- Plastic wrap in case of burns

Neurotrophic keratitis

- Recurrent unrecognized trauma
- Lack of growth factors
- Decreased tear production
- Toxicity from medications

Treatment

- Lubrication
- Hypertonic saline ointment
- BCL + tarsorrhaphy
- Autologous serum/platelet-rich plasma
- Cenegermin (rNGF) drops.

PRACTICAL PEARLS IN NUCLEUS MANAGEMENT DURING PHACOEMULSIFICATION: CLINICAL CASE SCENARIOS

Dr Ashok Shroff, Mumbai

Phaco procedure

- Only scanty peripheral cortex
- No epinucleus
- No need for hydro
- Routine Phaco-low parameters
- Be careful to avoid PCR.

SETTING UP A PRIVATE PRACTICE

Dr Puneeth Isloor, Shimoga

Where to set up clinic?

Tier 1 city	Tier 2/3
More hard work	Slightly easier
Excellent for pure superspeciality	Difficult to practice pure superspeciality
More money in hand	Lesser money than metros to start with
Marketing is an absolute necessity	Word of mouth works

Bare minimum equipment: Slit lamp, tonometer and biometry, auto-REF/trial set, furniture, autoclave, OT table and chair, microscope and phacomachine, cataract instrument set, linen, drugs, gloves, OT gowns, consumables.

Add-ons for specialties and existing practice: OCT, LASER, fundus photography and FFA-Reina; perimetry, OCT for glaucoma; topography/cross-linking machine/ Rose K lenses/Eye bank-cornea.

Keep bare minimum staff

Tips and Tricks

- Listen to your patient's story with patience.
- Eye contact when you talk.
- Never scold or be curt/rude, no matter how irritable you are. IT MATTERS
- Ask them about themselves or family in brief.
- Pacify patients irritable about waiting time to the best extent possible. Send troublemakers for lunch/ meal while they dilate.
- Prescribe them placebo drops even if not indicated if they hint at wanting it.
- Prescribe that spectacle they insist on having or changing.
- Try to minimize investigations to the bare minimum possible.

DYSPHOTOPSIA

Dr Vikram Jain, New Delhi

Dysphotopsia is an undesirable subjective optical phenomenon after uncomplicated cataract surgery.

- POSITIVE – Streaks, arcs, starbursts
- NEGATIVE – Temporal dark shadow
- MULTIFOCAL – Haloes, rings

There are no objective tests for dysphotopsia, only diagnosed from patient complaints. It is important to distinguish between dysphotopsia and light flashes from retinal vitreous traction or a linear streak from striae in the posterior capsule causing a Maddox rod effect. Positive dysphotopsia is related to bright artefacts of light on the retina, while negative dysphotopsia is manifested by a dark crescent or curved shadow.

Surgical management

- Sulcus piggybacks IOL-disrupts any aberrant light pathways that are casting a shadow.
- Reverse optic capture
- IOL repositioning into sulcus
- Dysphotopsia IOL
- Horizontal IOL positioning.

■■■■

News and Views

Diagnosing Hypertension: Inter-arm Difference in Blood Pressure

Hypertension is a very strong and established risk factor for cardiovascular disease (CVD). A timely and accurate diagnosis is therefore crucial for primary prevention of heart disease. However, hypertension remains undiagnosed and undertreated in many because of its insidious nature despite it being amenable to easy diagnosis and treatment.

A new study published in the journal *Hypertension* says that blood pressure (BP) should be measured in both arms and the higher reading should be taken into consideration as being more diagnostic of hypertension.[1]

Clark and coauthors studied data of 53,172 adults from 23 international studies from the Inter-arm Blood Pressure Difference-Individual Participant Data Collaboration. These participants had their BP recorded in both arms. Their mean age was 60 years. Women comprised almost half (48%) of the study population. In this study, the researchers sought to examine associations of higher or lower readings of arm systolic BP with the diagnosis of hypertension, cardiovascular (CV) events and mortality.

Almost 30% of participants had a systolic inter-arm difference in BP of ≥10 mmHg, based on a single pair of readings. A mean difference of 6.6 mmHg was noted in the arm systolic BP between higher and lower readings. When the higher arm reading was used, the systolic BP of 6,572 participants (12.4%) was reclassified from below to above 130 mmHg. And in 6,339 (11.9%) patients, it was reclassified from below to above 140 mmHg.

Among patients with no underlying heart disease, the mean atherosclerotic cardiovascular disease (ASCVD) scores and Framingham risk scores to estimate the 10-year risks of CV events showed a significant rise when the higher systolic BP value was used to calculate the scores compared to the lower BP reading. This led to reclassification of 4.5% and 9.3% of participants with ASCVD and Framingham scores, respectively from below to above clinically important CV risk thresholds.

Sometimes, the BP reading in both arms may vary. While a difference of a few points is not a cause for concern, a difference of 10 to 15 mmHg has prognostic significance. In its 2019 scientific statement, the American Heart Association (AHA) recommends that BP should be recorded in both arms at the first visit and to use the arm with the higher reading for measurements at subsequent visits.[2] But this may not be widely practiced in clinics. While it sounds cumbersome and time-consuming, it will facilitate accurate diagnosis of hypertension and risk stratification for CVD. All management decisions should be based on the higher reading. Measuring BP only in one arm may run the risk of the diagnosis of hypertension being missed and also underestimation of their CV risk.

This study provides strong evidence that using the higher reading of arm BP, instead of the lower reading, reclassifies individuals over the thresholds used to diagnose hypertension and also improves CV risk stratification. Many would have fallen through the net if the lower reading was considered. Hence, it's of vital importance that BP is routinely measured in both arms.

References

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2. Clark CE, Warren FC, Boddy K, et al. Higher arm versus lower arm systolic blood pressure and cardiovascular outcomes: a meta-analysis of individual participant data From the INTERPRESS-IPD Collaboration. Hypertension. 2022 Aug 2;HYPERTENSIONAHA12118921.

Intrinsic Capacity and Risk of CKD in Older Type 2 Diabetes Patients

Older patients with type 2 diabetes are at higher risk of chronic kidney disease (CKD) if they had reduced intrinsic capacity, suggests a study from Taiwan recently published as a preprint on Research Square.[1] The presence of obesity, sarcopenic obesity in particular, further enhanced this risk.

A total of 2,482 patients, mean age 72 years, who had been diagnosed with type 2 diabetes between 2006 and 2021 were enrolled in this cross-sectional study to examine the impact of intrinsic capacity and obesity on risk of. None of the selected subjects had any evidence of a nondiabetic kidney disease (such as polycystic kidney, primary glomerular diseases) and were otherwise healthy. The World Health Organization (WHO) Integrated Care for Older People (ICOPE) screening tool was used to evaluate the intrinsic

capacity of each participant including assessment for cognitive decline, limited mobility, malnutrition, visual impairment, hearing loss and depressive symptoms. Obesity was graded on the basis of body mass index (BMI) with normal weight ranging from 18.5 to <24 kg/m^2, overweight 24 to <27, mild obesity as BMI 27 to <30, moderate obesity 30 to <35 and severe obesity >35 kg/m^2. Estimated glomerular filtration rate (eGFR), urine albumin-to-creatinine ratio (UACR) and the 2012 KDIGO criteria were used to risk stratify CKD as low, moderately increased, high and very high.

The average duration of type 2 diabetes among the participants was 14 years. The mean eGFR was 69 mL/min/1.73 m^2 and the median UACR was 19 mg/g. The intrinsic capacity score was 0 in the majority of patients (61.4%). In 26.4%, the score was 1. In 12% patients, the score ranged from 2 to 5.

Compared to patients with an intrinsic capacity score of 0 or 1, those with scores of 2 to 5 had long-standing diabetes. They tended to be female, older and have higher BMI (severe obesity). They were also more likely to use oral hypoglycemic agents (OHAs)/insulin. The risk of CKD increased with increase in the intrinsic capacity score. The risk (moderate to very high) was 76% higher in patients with score 2 to 5 compared to those with score of 0 with odds ratio (OR) of 2.57. Even those with a score of 1 were at risk of CKD with OR of 1.36.

Obesity and the intrinsic capacity score also had a synergistic impact on CKD risk, which increased nearly three times among those with score of 1 to 5 and moderate/severe obesity (OR 2.71) versus nonobese participants with a score of 0.

Intrinsic capacity is a new concept introduced by the WHO for healthy aging. This is the Decade of Healthy Ageing (2021-2030). Healthy aging "the process of developing and maintaining the functional ability that enables well-being in older age". The interaction of intrinsic capacity and the environment is functional ability. Intrinsic capacity, as per WHO is "the combination of the individual's physical and mental, including psychological, capacities".[2] Both intrinsic capacity and functional ability decline with advancing age. Any underlying disease also adversely impacts the intrinsic capacity and functional ability.

This study is the first to use intrinsic capacity to gauge the risk of CKD in older diabetic patients, note the authors. It showed that the older type 2 diabetes patients with higher intrinsic capacity scores were at higher risk of developing CKD.

Assessment of impaired intrinsic capacity and obesity can help identify older type 2 diabetes patients at risk of CKD much before any deviations in the conventional markers of renal function (UACR, eGFR and serum creatinine) become evident. Early intervention in these patients can prevent the onset of CKD.

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Diagnostic Criteria for Hand Eczema

A combination of itch plus minimum of two skin signs such as dryness, erythema, fissures may be considered as diagnostic criteria for diagnosing hand eczema (HE), suggests a study reported in the journal *Contact Dermatitis*.[1]

Researchers from the University of Copenhagen in Denmark enrolled 1,663 health care workers composed of nurses, physicians, midwives, physiotherapists, biotechnicians for this multicenter study. The participants were enquired about history of HE during the coronavirus disease 2019 (COVID-19) pandemic from March 2020 to February 2021. A digital questionnaire was used to retrospectively analyze skin changes such as dryness, erythema, fissures, itch, scaling, stinging or vesicles. Through this study, the researchers aimed to investigate a correlation between self-reported skin signs and symptoms on the hands with self-reported HE and also attempted to define criteria for HE.

Nearly 12% of those surveyed reported HE. Majority of these (91.4%) reported having at least one skin-related symptom compared to 32.3% who did not self-report having HE. The symptom that showed maximum correlation with HE was itch with sensitivity and specificity of 78.5% and 78.6%, respectively followed by erythema with sensitivity and specificity of 77.4% and 78.2%, respectively. However, the PPV of erythema was low at 38.7% as almost 22% of participants without self-reported HE also reported erythema.

Fissures, scaling and vesicles had low sensitivity and positive predictive value (PPV) and hence lacked utility in identifying self-reported HE. Dryness, though may be regarded as a precursor of HE even though it had low specificity and PPV.

Combining two or more signs such as erythema, scaling, fissures and vesicles with itch resulted in a sensitivity of around 53% and specificity of nearly 94%.

In this questionnaire-based study, more than 90% of participants with self-reported HE had at least one of the following: erythema, scaling, fissures, vesicles. However, more than 30% of those who did not report HE also had at least one of these signs. It is therefore important to carefully analyze and compare the self-reported HE and the signs and symptoms. Based on their findings, the authors suggest a minimum of two signs (i.e., erythema, scaling, fissures, vesicles) combined with itch as diagnostic criteria for HE, although they recommend further studies to validate the accuracy of this association.

Reference

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First Treatment for Eosinophilic Esophagitis

The US Food and Drug Administration (FDA) has expanded the indications for the monoclonal antibody dupilumab to also include treatment for eosinophilic esophagitis making it the first treatment for this condition. It has been approved for adults and children aged 12 and older weighing at least 40 kg. The drug is a joint collaboration between Sanofi and Regeneron.

Eosinophilic esophagitis is a chronic inflammation of the esophagus and is marked by high eosinophils in the esophagus. The symptoms include difficulty eating, difficulty swallowing, heartburn, chest pain and food getting stuck in the esophagus.

Side effects: Injection site reactions, upper respiratory infections, joint pain, herpes viral infections.

Contraindications: Patients with known hypersensitivity to dupilumab or any of its inactive ingredients.

Warnings and precautions: Allergic reactions, conjunctivitis, keratitis, joint pain; use in patients with certain parasitic infections and use along with live vaccinations.

Dupilumab is already FDA approved for the treatment of moderate-to-severe atopic dermatitis in adult and children (≥6 years), as add-on maintenance treatment of moderate-to-severe asthma in adult and children (≥6 years) and in adults with inadequately controlled chronic rhinosinusitis with nasal polyposis.

(*Source: US FDA, May 2022*)

Segmental Colectomy or Total Colectomy in Colonic Crohn's Disease?

Segmental colectomy is a safe and feasible surgical option for some patients with colonic Crohn's disease (cCD), according to a study published in the *Journal of Crohn's and Colitis*.[1]

The Segmental COlecTomy for CroHn's disease (SCOTCH) study retrospectively analyzed data of all patients who underwent segmental or total colectomy for cCD between 2000 and 2019 at six European tertiary centers. Out of the 687 patients included in the study, 285 (41.5%) underwent segmental colectomy (resection of 1-3 segments), while 402 (58.5%) had total colectomy (resection of 4-5 segments). The secondary objectives of the study were to assess perioperative complications, stoma formation and predictors of recurrence. The duration of disease was 10.4 years (mean). Patients with a history of bowel resection or those with colorectal cancer were not included in the study.

The long-term cumulative recurrence rate at 15 years after the surgery, which was the primary aim of the study, was 27% for patients with segmental colectomy and 44% among those who had total colectomy. Omission of biological therapy was associated with increased risk of recurrence in patients with involvement of 1 to 3 segments with hazard ratio (HR) of 5.6. The number of segments involved also correlated with recurrence risk with HR of 2.5. The HR for early age diagnosis was 2.8. Patients who underwent total colectomy were younger in age and had their disease for a longer duration (11.3 vs. 9.2 years). Inflammatory disease, current (37.8% vs. 16.5%) or previous (56% vs. 32.6%) perianal Crohn's disease were found more often in this group.

Small bowel disease and perforations occurred frequently in patients who underwent segmental colectomy. But total colectomy patients more often required stomas, both temporary (31.6% vs. 21.4%) and definitive (39.3% vs. 8%) and re-hospitalization at 90 days (6% vs. 2.1%). No between-group differences were noted for postoperative morbidity and mortality.

The SCOTCH study has shown that compared to total colectomy, segmental colectomy was a safer procedure for patients with cCD and also reduced the need for stomas. The number of segments affected, younger age and perianal disease were predictors for disease recurrence, while administration of postoperative biologics significantly reduced risk of recurrence. These findings will help individualize treatment. The decision to opt for either segmental or total colectomy depends

on the extent of the disease but it should be made after taking informed consent from the patient.

Reference

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Leisure Activities and Dementia

Do leisure activities have an impact on dementia? Researchers from China set out to examine this premise in a systematic review and meta-analysis of 38 studies involving over 2 million people. And they found an inverse relationship between leisure activities and the odds of dementia due to any cause including Alzheimer's disease and vascular dementia. Participants were assigned questionnaires or were interviewed to gather information about various types of leisure activities, including cognitive, physical and social activities. The follow-up period was for 3 years. In these studies, a total of 74,700 people developed dementia.

Results showed a 17% reduction in risk of developing dementia among those who engaged in leisure activities, as a whole, compared to those who did not.

Mental activities such as reading, writing, using a computer and craftwork had 23% lower risk of dementia. Similarly, physical activities like walking, swimming, yoga, playing games were found to reduce dementia risk by 17%. Joining a social club, visiting relatives and friends or participating in prayer meetings also reduced the risk of dementia by 7%.

This study shows why hobbies are good for health, including mental health. Participating in leisure activities reduces the risk of dementia. Everyone should find some activity that interests us greatly and pursue it in our spare time.

Reference

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Vegetarian Diet and Risk of Hip Fracture

Women who eat a vegetarian diet have a higher probability of suffering a hip fracture compared to women who were regular meat eaters, suggests a study of participants from the UK Women's Cohort Study published in the journal *BMC Medicine*.[1]

In this study, a 217-item food frequency questionnaire was used to categorize women aged 35 to 69 years as vegetarian (ate neither meat nor fish), regular meat-eaters (ate ≥5 servings of meat/week), occasional meat-eaters (<5 servings in a week) and pescatarian (ate fish but did not eat meat). The calcium intake was comparable among all the diet groups. Researchers sought to examine the possible risk of hip fracture in each group. The follow-up time was a median of 22.3 years. A total of 822 hip fracture cases were recorded among the 26,318 women included in the study.

Results showed that vegetarian women were at a 33% higher risk of hip fracture compared to women who ate meat regularly with a HR of 1.33. However, no such association was noted among women who were occasional meat-eaters or pescatarians with HR 1.00 and HR 0.97, respectively. Although no correlation of the diet with BMI was noted, underweight women with BMI <23.5 were at a 46% higher risk for fracture, irrespective of the type of diet.

Reference

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Type of Mask and Risk of COVID-19

Wearing a surgical mask did not protect against COVID-19 as effectively as did a respiratory mask, suggests a study published in *JAMA Network Open*.[1]

The objective of this study was to find out the impact of the type of mask and level of exposure on the risk of COVID-19 among 2,919 health care workers; aged 18 to 73 years (mean age 43). A little over one-quarter (26%) of the participants had severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and 13% of the infected health care workers had no history of exposure to a COVID patient. Among those who were exposed to COVID-19 patients, 21% of the health care workers using respirator masks were positive for COVID, whereas this number was 35% among those who used surgical/mixed masks.

On multivariable analysis, exposure to a positive household contact was associated with the highest risk of infection (nearly 8-folds increase) with an OR of 7.79. Expectedly, SARS-CoV-2 vaccination was protective (OR 0.55). Following exposure for 2 to 4 hours, the likelihood of testing positive was 25%. This probability increased to nearly 33% with exposure for 8 to 16 hours and 43% for exposure time of more than 64 hours.

This observational study demonstrates that the type of mask used by the health care workers influenced their

risk of acquiring SARS-CoV-2 infection and also stresses on the beneficial effects of COVID-19 vaccines. Those who wore respirators were at a lower risk of infection regardless of the cumulative exposure. Therefore, consistent use of a proper mask (respirators) along with COVID vaccination (primary vaccination plus precaution dose) may reduce the occupational risk of infection among health care workers managing COVID patients, particularly who are at high risk.

Reference

1. Dörr T, Haller S, Müller MF, et al. Risk of SARS-CoV-2 acquisition in health care workers according to cumulative patient exposure and preferred mask type. JAMA Netw Open. 2022;5(8):e2226816.

Aldosterone is Linked with Worsening of Kidney Disease

The study, published in the *European Heart Journal*, revealed that aldosterone was linked with an increased risk of kidney failure in patients with CKD. Aldosterone is a steroid hormone secreted by the adrenal glands that play a central role in controlling BP. But increased levels of aldosterone can lead to high BP, CVDs and kidney diseases.

The study led by an Indian-American researcher showed that the risk of CKD worsening and developing into end-stage kidney disease was independent of whether or not patients had diabetes. In the study, Dr Ashish Verma, Assistant Professor at Boston University School of Medicine, US, and his team investigated the associations between aldosterone concentrations in the blood and kidney disease progression. Dr Verma added that the findings of the study are important because they show that aldosterone not only plays a crucial role in the progression of CKD but also in heart and blood vessel problems.

The team observed that the higher levels of aldosterone concentrations in the blood were associated with a lower eGFR and lower levels of potassium in the blood. On the other hand, increased concentrations of aldosterone were linked with higher potassium and protein concentrations in urine. Further, they found that each doubling of aldosterone concentrations in the blood increased the risk of CKD progression by 11%. Patients with the highest concentrations had an increased risk of 45% in comparison to patients with the lowest aldosterone concentrations. Also, the risk ratio was found to be similar regardless of whether or not patients also had diabetes.

(Source: https://www.daijiworld.com/news/newsDisplay?newsID=989608)

Risk of Heart Attack, Stroke and Death can be Reduced by Using Dietary Salt Substitutes

The findings of a study published in the journal *Heart* suggested that dietary salt substitutes can lower the risk of heart attack, stroke and death from all causes and CVD. Globally, CVD is the leading cause of death, while high BP is a major risk factor for early death. The researchers stated that around 1.28 billion people around the world have high BP, although more than half of these are undiagnosed.

Salt substitutes, such as potassium chloride (KCl), are known to help lower BP. Hence, the researchers collected data from all the research databases to evaluate the effects of a salt substitute on BP, CV health and early death. The findings of the pooled data analysis showed that salt substitutes had a BP-lowering effect on all the participants, with an overall reduction in systolic BP and diastolic BP of 4.61 mmHg and 1.61 mmHg, respectively.

In the study, the reductions in BP seemed to be consistent, irrespective of geography, age, sex, history of high BP, weight (BMI), baseline BP and baseline levels of urinary sodium and potassium. The pooled data analysis that included the results of five trials showed that salt substitutes lowered the risks of early death from any cause by 11%, CVD by 13% and the risks of heart attack or stroke by 11%, respectively.

(Source: https://www.hindustantimes.com/lifestyle/health/dietary-salt-alternatives-can-reduce-the-risk-of-heart-attack-stroke-and-death-101660564481981.html)

■■■■

Cultivating Positive Thoughts

Darkness present in a room cannot be removed physically. It can only be removed by switching on the light. Darkness, therefore, can be defined as absence of light. Similarly, negative thoughts can be defined as absence of positive thoughts. It is very difficult to remove negative thoughts but it is very easy to cultivate positive thoughts. Persistent negative thoughts creates sympathetic overactivity and leads to lifestyle disorders like blood pressure, acidity, depression, diabetes and heart blockages.

Many Vedic scriptures have talked about modalities of living a positive life and cultivating positive thoughts. Navratras observed twice in a year involve three phases of three days each, the first phase where one tries to avoid doing negative things wilfully (worshipping the Kali), the second phase of three days where one wilfully performs positive activities (worshipping the Laxmi) and finally the last three days where one reads about positive lifestyle (worshipping the Saraswati).

One of the Yoga Sutras of Patanjali talks about removal of negativity by cultivating opposite thoughts. For example, the thoughts of theft can be removed by bringing the thoughts of charity in mind. Patanjali wrote (2.32, 2.33) "that to counteract destructive attitudes one should cultivate thoughts of the opposite kind. These destructive attitudes, as for example thoughts of violence, whether they are done, caused to be done or merely approved of; whether motivated by greed, anger or preceded by ignorance and whether mild, moderate or extreme, will result in infinite suffering and ignorance. Therefore, one should cultivate thoughts of the opposite kind."

Lord Buddha, in his teachings, has given another formula by which one does not have to cultivate opposite thought to cultivate any positive thought. Buddha said that hatred couldn't be removed by hatred; it can only be removed by bringing the love back. It is a fact that one cannot hate an unknown individual. One can hate only a person whom he or she has loved once. Generalized positive behavior involves promoting smile, appreciating and passing on compliments to others.

Adi Shankaracharya, in his teachings, propagated the third way of negating the negative thoughts. He said that every thought has multiple perspectives and one should think differently for every situation.

Cultivation of positive thoughts, opposite thoughts or changing the perception of the thoughts, can be all in the mind, may remain silent or end up with an action. Even giving a silent blessing to someone without his or her knowledge is considered as a positive thought.

Satwik thoughts come from satwik mind and satwik mind in turn comes from satwik food. The best way to remember a satwik food is whatever is offered to God is satwik in nature. The food is fresh, seasonal, locally grown, with cooking done on Ayurvedic principles, usually naturally white and in most instances contained in the top part of the tree or the plant.

The frame and state of mind also has to do with death and rebirth. Both Buddha and Bhagwad Gita describe it in great details. The state of mind at the time of death, determines the rebirth. If the mind is calm and peaceful and imbued with positive thoughts at the time of death, this will augur well for a happy rebirth. However, if the mind is in a state of anger or has strong desire or is fearful, etc., this will predispose to an unhappy or lower type of rebirth.

The mind that arises at the time of death is usually the one that the person is most habituated to. People tend to die in character. So, Buddha wrote that the time to prepare for death is "now", because if we gain control over our mind now and create positive aura, we will have a calm and controlled mind at the time of death and be free of fear.

■■■■

Determination and Persistence

This is a real life story of engineer John Roebling started building the Brooklyn Bridge in New York, USA back in 1870. The bridge was completed in 1883, after 13 years. A creative engineer named John Roebling was inspired by an idea to build a spectacular bridge connecting New York with the Long Island.

However, bridge building experts throughout the world thought that this was an impossible feat and told Roebling to forget the idea. It just could not be done. It was not practical. It had never been done before.

Roebling could not ignore the vision he had in his mind of this bridge. He thought about it all the time and he knew deep in his heart that it could be done. He just had to share the dream with someone else. After much discussion and persuasion he managed to convince his son Washington, an up and coming engineer, that the bridge in fact could be built.

Working together for the first time, the father and son developed concepts of how it could be accomplished and how the obstacles could be overcome. With great excitement and inspiration, and the headiness of a wild challenge before them, they hired their crew and began to build their dream bridge.

The project started well, but when it was only a few months underway a tragic accident on the site took the life of John Roebling. Washington was also injured and left with a certain amount of brain damage, which resulted in him not being able to talk or walk.

"We told them so." "Crazy men and their crazy dreams." "It's foolish to chase wild visions." Everyone had a negative comment to make and felt that the project should be scrapped since the Roeblings were the only ones who knew how the bridge could be built.

In spite of his handicap, Washington was never discouraged and still had a burning desire to complete the bridge and his mind was still as sharp as ever. He tried to inspire and pass on his enthusiasm to some of his friends, but they were too daunted by the task.

As he lay on his bed in his hospital room, with the sunlight streaming through the windows, a gentle breeze blew the flimsy white curtains apart and he was able to see the sky and the tops of the trees outside for just a moment.

It seemed that there was a message for him not to give up. Suddenly an idea hit him. All he could do was move one finger and he decided to make the best use of it. By moving this, he slowly developed a code of communication with his wife.

He touched his wife's arm with that finger, indicating to her that he wanted her to call the engineers again. Then he used the same method of tapping her arm to tell the engineers what to do. It seemed foolish but the project was under way again.

For 13 years, Washington tapped out his instructions with his finger on his wife's arm, until the bridge was finally completed. Today, the spectacular Brooklyn Bridge stands in all its glory as a tribute to the triumph of one man's indomitable spirit and his determination not to be defeated by circumstances. It is also a tribute to the engineers and their team work, and to their faith in a man who was considered mad by half the world. It stands too as a tangible monument to the love and devotion of his wife who for 13 long years patiently decoded the messages of her husband and told the engineers what to do.

Perhaps, this is one of the best examples of a never-say-die attitude that overcomes a terrible physical handicap and achieves an impossible goal.

Often, when we face obstacles in our day-to-day life, our hurdles seem very small in comparison to what many others have to face. The Brooklyn Bridge shows us that dreams that seem impossible can be realized with determination and persistence, no matter what the odds are.

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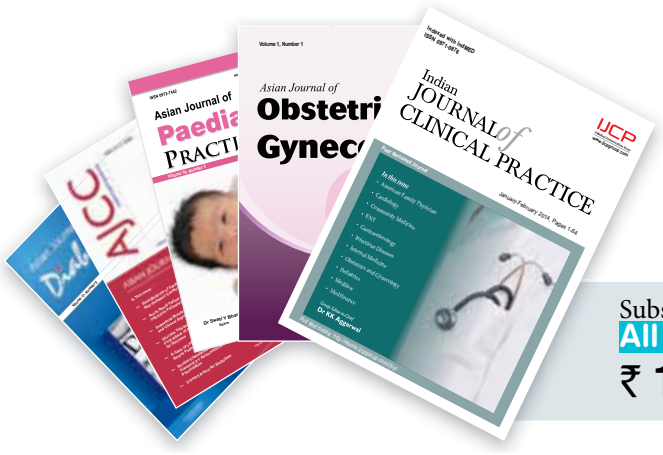

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Lighter Side of Medicine

HUMOR

NO + NO = YES

In a mathematics class the teacher told the student that minus * (times) minus –*– = + and also NO + NO = Yes. So, a boy was pressed to go to toilet. He then asked the teacher, "Excuse me, sir, can I use the toilet?" The teacher said, "No." The student asked again, "Excuse me, sir, can I use the toilet?" The teacher said, "NO."

Immediately student stood up to go to the toilet, the teacher was surprised and said, "Where are you going?" He said, "Toilet." The teacher asked him, "Why?" He said, "NO + NO = Yes, so since you said NO two times I know you mean Yes." So, the class burst into laughter.

FLUSTERED

As an instructor in driver education at the local area High School, I've learned that even the brightest students can become flustered behind the wheel.

One day I had three beginners in the car, each scheduled to drive for 30 minutes. When the first student had completed his time, I asked him to change places with one of the others. Gripping the wheel tightly and staring straight ahead, he asked in a shaky voice, "Should I stop the car first?"

BANK NAME

Mother decided that 10-year-old Cathy should get something 'practical' for her birthday. "Suppose we open a savings account for you?" mother suggested.

Cathy was delighted. "It's your account, darling," mother said as they arrived at the bank, "so you fill out the application."

Cathy was doing fine until she came to the space for "Name of your former bank." After a slight hesitation, she put down 'Piggy.'

I GET THE CIRCLE AROUND IT

Tech support: How may I help you?

Customer: I'm writing my first e-mail.

Tech support: OK, and what seems to be the problem?

Customer: Well, I have the letter 'a' in the address, but how do I get the circle around it?

BRIBERY

A baseball club is among the features of a boys' organization connected with a prominent church. The team was challenged by a rival club. The pastor gave a special contribution of five dollars to the captain, and stated that the money should be used to buy bats, balls, gloves, or anything else that might help to win the game. On the day of the game, the pastor was surprised to see that nothing new could be seen in the club's paraphernalia. He called the captain.

"I don't see any new bats, or balls, or gloves," he said.

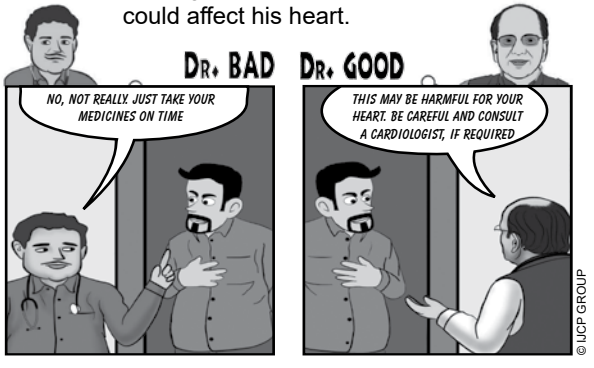
"We haven't anything like that," the captain admitted.

"But I gave you five dollars to buy them," the pastor exclaimed.

"Well, you see, you told us to spend it for bats, or balls, or gloves, or anything that we thought might help to win the game, so we gave it to the umpire."

Dr. Good and Dr. Bad

SITUATION: A type 2 diabetic patient had uncontrolled blood glucose levels. He was worried if this could affect his heart.



LESSON: An independent association has been established between uncontrolled blood glucose levels and subclinical LV dysfunction. This may increase systolic and diastolic energy loss in LV. The researchers have shown that LV systolic energy loss may help in predicting preclinical LV dysfunction for diabetic patients with uncontrolled blood glucose levels. *Int J Cardiovasc Imaging. 2017;33(8):1151-8.*

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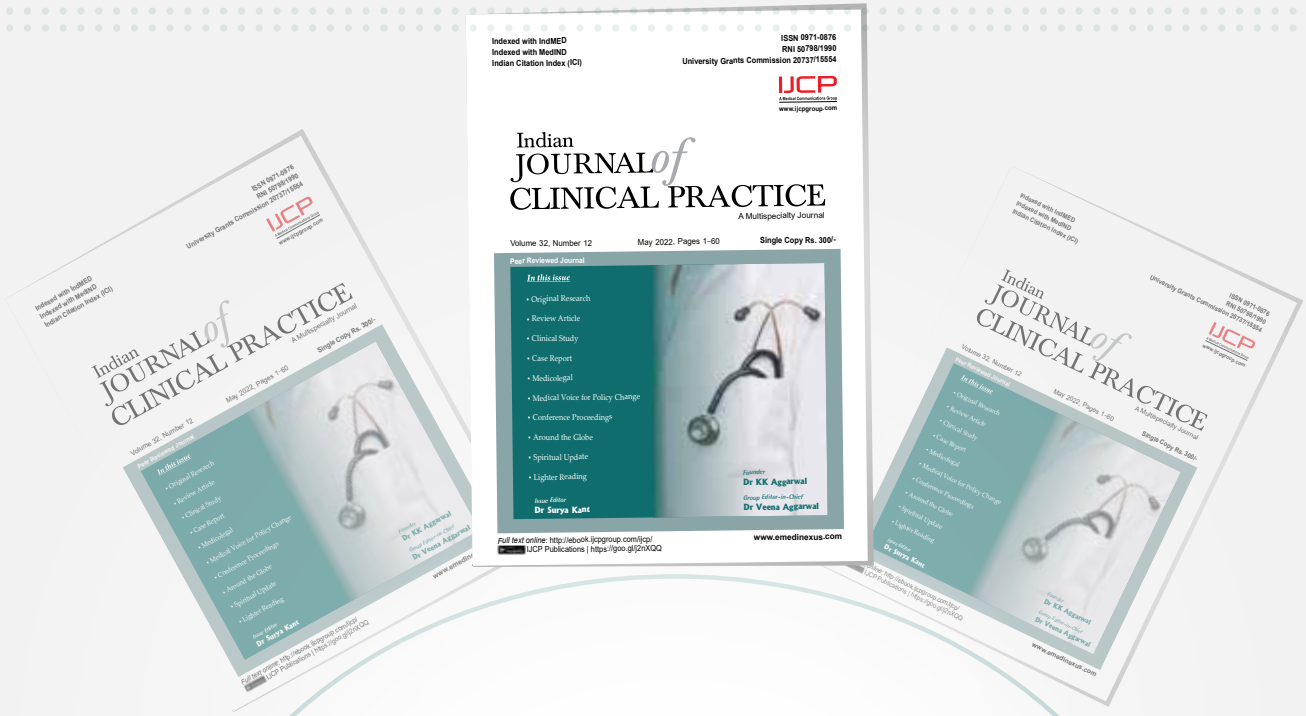

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Books

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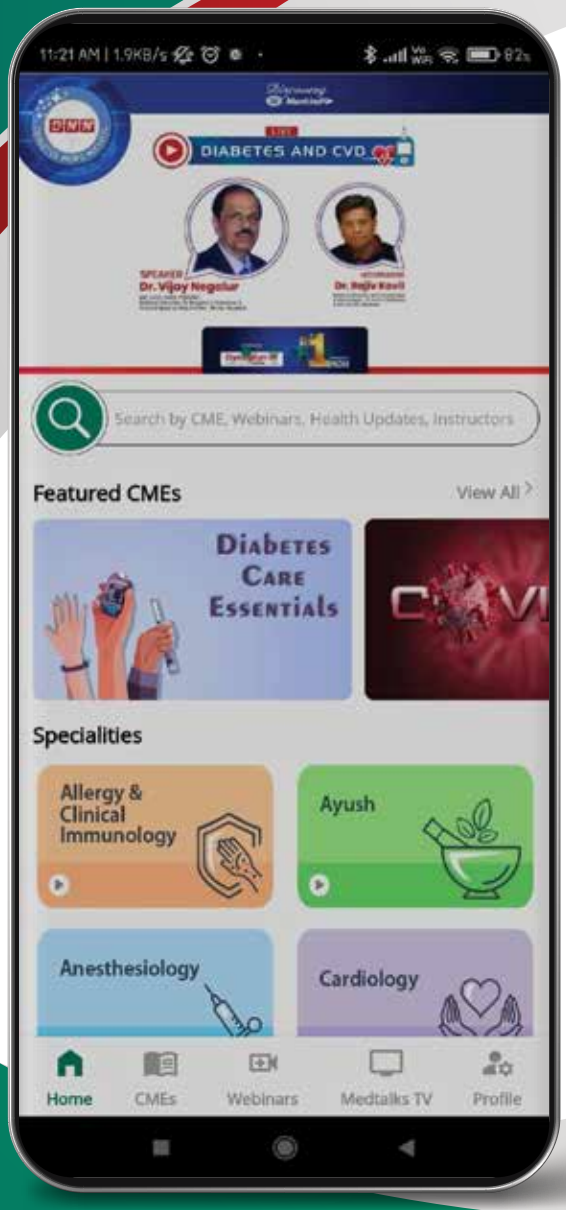

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