

## Medtalks with Dr KK Aggarwal

- **Smoking and heart burn:** Smoking can irritate the entire gastrointestinal tract. In addition, frequent sucking on a cigarette can cause you to swallow air. This increases pressure inside the stomach, which encourages reflux. Smoking can also relax the lower esophageal sphincter (LES).
  - The Centers for Disease Control and Prevention (CDC) released a report about a boy who contracted tetanus in Oregon back in 2017. It was the first tetanus case in the state in over thirty years. Very few physicians in the US know how to manage tetanus because it's so rare. The CDC says the boy's parents spent about 800 thousand dollars on medical expenses. The average tetanus shot costs around 30 dollars.
  - If the disability percentage is below 80 with the use of an assisted device, a candidate will be eligible to apply to study medicine. It will be applicable to UG and PG courses. The Board of Governors-Medical Council of India (BoG-MCI) approved the proposal.
  - Eating a low-calorie diet that mimics fasting can help reduce intestinal inflammation and repair the gut, and help treat inflammatory bowel disease (IBD). Researchers from the University of Southern California found that a "fasting mimicking diet" caused a reduction in intestinal inflammation and an increase in intestinal stem cells in part by promoting the expansion of beneficial gut microbiota.
  - Preliminary research suggests a possible association between consumption of sugar-sweetened beverages (SSBs) and higher disability in patients with multiple sclerosis (MS). In a cross-sectional study, MS patients who reported drinking two cans of SSBs per day were far more likely to have severe disability than those who seldom consumed these drinks. (*Elisa Meier-Gerdinigh, MD, of St. Josef Hospital in Bochum, Germany*)
  - Exposure to second hand smoke is linked with the development of chronic kidney disease (CKD) among nonsmokers, according to a large cohort study published online in the *Clinical Journal of the American Society of Nephrology*.
  - Crohn's disease involves inflammation of the digestive tract. But new research into its causes is focusing on fungi commonly found on the skin.
- These microscopic fungi, called *Malassezia restricta*, are linked to dandruff. They're found in oily skin and scalp follicles, but they also end up in the gut. However, it's not known how they get there or what they do.
- An echocardiographic substudy of the COAPT trial failed to identify any baseline echo characteristics to differentiate patients with heart failure (HF) and secondary mitral regurgitation (MR) that would or would not benefit from the MitraClip.
  - The US Food and Drug Administration (FDA) has issued a safety alert regarding cyber security vulnerabilities in telemetry systems in certain medtronic lines of CareLink programers and monitors used with many of its defibrillator implant systems.
  - Amid an ongoing series of tainted sartan drug recalls, the US FDA announced that it will not object to temporary distribution of losartan that contains the impurity N-Nitroso-N-methyl-4-aminobutyric acid (NMBA) above the interim acceptable intake limit of 0.96 parts per million (ppm) and below 9.82 ppm until it can be eliminated.
  - Immediate coronary angiography may offer no survival advantage over a delayed-angiography approach in adults resuscitated but unconscious after out-of-hospital cardiac arrest with no sign of ST-segment elevation myocardial infarction (STEMI), suggests a randomized trial with more than 500 patients. Survival at 90 days, the Coronary Angiography After Cardiac Arrest Trial (COACT) primary end point, was similar at about 66% in both the immediate- and delayed-cath groups.
  - Long-term follow-up of stabilized patients with infective endocarditis in the left side of the heart shows no delayed treatment failure with a change from intravenous to early oral antibiotic treatment, sparing them weeks of in-hospital treatment. The results, a post hoc exploratory analysis of the POET trial, were presented at the ACC 2019 Scientific Session (ACC. 19), and published online March 17 as Correspondence in the *New England Journal of Medicine*.
  - More early research into a possible male contraceptive pill was presented at ENDO 2019:



artesunate is safe, well-tolerated and can be administered to infants, children, and pregnant women in their second and third trimesters, as well as during lactation, according to the CDC. In the first trimester of pregnancy, the benefits of IV artesunate treatment outweigh the risk of death and poor outcomes due to severe malaria.

- How you can reverse mild cognitive impairment (MCI): Certain types of medications can cause memory problems. Your doctor may be able to offer you a different drug therapy that won't affect your memory. Depression is also linked to MCI. It may be possible to alleviate symptoms of MCI by treating the depression.
- **FDA approves device for treating moderate-to-severe chronic heart failure:** The US FDA has approved the Optimizer Smart system for treating patients with chronic, moderate-to-severe heart failure who are not suited for treatment with other heart failure devices such as cardiac resynchronization therapy to restore a normal timing pattern of the heartbeat.  
The FDA gave the device a Breakthrough Device designation because it treats a life-threatening disease and addresses an unmet medical need in patients who fail to get adequate benefits from standard treatments and have no alternative treatment options.
- As per a British study, a high-sensitivity cardiac troponin 1 (hs-cTnI) assay to diagnose myocardial infarction (MI) may lead to overdiagnosis with resulting inappropriate therapies. (University Hospital Southampton).
- US FDA is proposing a rule for breast cancer screenings that would require doctors to give women more information about the risks associated with dense breasts. FDA wants doctors to ensure patients understand how dense breasts, which don't have a lot of fatty tissue, can skew the accuracy of mammograms and present a higher risk of developing breast cancer later in life. About 12 percent of all women are diagnosed with breast cancer at some point in their life. Given that more than half of women over the age of 40 in the US have dense breasts, helping to ensure patient access to information about the impact that breast density and other factors can have on the risk for developing breast cancer is an important part of a comprehensive breast health strategy. Mammograms are considered the best way to detect breast cancer. However, they're not

as reliable in dense breasts, characterized as those with not as much fat and more fibrous or glandular tissue, according to the American Cancer Society. Dense tissue makes it harder for doctors to see cancer, meaning the tests can be less accurate. Mammograms of dense breasts can be difficult to interpret because the dense tissue can obscure signs of breast cancer and lower the sensitivity of the image. Dense breasts have also been identified as a risk factor for developing breast cancer.

- The US FDA has approved oral testosterone undecanoate to treat men with hypogonadism resulting from Klinefelter syndrome or tumors that have damaged the pituitary gland.
- The CDC once again issued a warning to pet owners that recent cases of Salmonella have been linked to pet hedgehogs, and the agency is warning pet owners to take precautions to avoid infection.

#### Statin Muscle-related Adverse Events

- Statin muscle-related adverse events are relatively uncommon. Myalgias and myopathy occur with a frequency of 2 to 11%. However, severe myonecrosis and clinical rhabdomyolysis are much rarer (0.5% and less than 0.1%, respectively). Patients can experience statin-induced myalgias without an elevation in serum creatine kinase (CK) concentration.
- The risk of muscle injury is substantially higher when taking a statin that is extensively metabolized by cytochrome P450 3A4 (CYP3A4; lovastatin, simvastatin, atorvastatin) together with a drug that interferes with CYP3A4.
- Pravastatin, fluvastatin, rosuvastatin, and pitavastatin are preferred when given to a patient receiving another drug that is a strong inhibitor of CYP3A4.
- Grapefruit juice inhibits CYP3A4; however, daily consumption of 8 oz or less of grapefruit juice or one-half of a grapefruit or less is unlikely to increase the risk of an adverse interaction or muscle injury.
- Enhanced susceptibility to statin-associated myopathy occurs in patients with acute or chronic renal failure, obstructive liver disease, and hypothyroidism.
- Muscle symptoms and/or signs usually begin within weeks to months after starting statins. Myalgias, weakness, and serum CK concentrations usually return to normal over days to weeks after drug discontinuation.

- Angiotensin II receptor blockers (ARBs) are recommended for the treatment of hypertension, heart failure, and CKD, with more than 61 million prescriptions written for valsartan, losartan, and irbesartan in the United States in 2016. Ongoing US FDA recalls — all in generic ARB-containing products — began last July when the probable carcinogen N-nitrosodimethylamine (NDMA) was detected in the valsartan active pharmaceutical ingredient (API) supplied by Zhejiang Huahai Pharmaceutical (ZHP), Linhai, China.

Within months, the rolling recalls had extended to irbesartan- and losartan-containing products. A second probable carcinogen, N-nitrosodiethylamine (NDEA), was identified last fall and a third, N-nitroso-N-methyl-4-aminobutyric acid (NMBA), in February.

- A petition filed before the Delhi High Court has sought directions to the Centre and the MCI to ensure that doctors prescribe generic medicines. The petition filed in public interest by advocate Amit Sahni contends that the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) was introduced to lower health care costs by providing quality generic medicines at affordable prices.
- Traditionally, experts have recommended not exercising at night as part of good sleep hygiene. Now a new study, published in *Sports Medicine*, suggests that you can exercise in the evening as long as you avoid vigorous activity for at least one hour before bedtime.

### Does My Patient have Hyponatremia?

Hyponatremia or sodium (Na) <135 mEq/L represents a relative excess of water in relation to Na.

Hyponatremia can be acute or chronic:

- Acute: <48 hours. Results from parenteral IV administration in postoperative patients (who have ADH hypersecretion associated with surgery) and from self-induced water intoxication (as in, for example, competitive runners, psychotic patients with extreme polydipsia and users of ecstasy).
- Chronic: >48 hours.

Hyponatremia can be categorized as mild, moderate or severe:

- Mild hyponatremia: 130-134 mEq/L

- Moderate hyponatremia: 120-129 mEq/L
- Severe hyponatremia: Na <120 mEq/L.

The symptoms of mild-to-moderate hyponatremia are relatively nonspecific and include headache, fatigue, lethargy, nausea, vomiting, dizziness, gait disturbances, forgetfulness, confusion and muscle cramps.

The symptoms of severe hyponatremia include seizures, obtundation, coma and respiratory arrest.

How do I know that my patient has hyponatremia? Look for the following:

**Is hyperglycemia present?** Corrected serum Na. The sodium level will fall by 2 mEq/L for every 100 mg/100 mL rise in glucose level.

**Rule out pseudohyponatremia:** Lipemic serum, severe obstructive jaundice or a known plasma cell dyscrasia.

**Rule out lab artefact:** Na measured with flame photometry.

**Recent prostate surgery:** Utilizing large volumes of electrolyte-poor irrigation fluid (or intrauterine procedures).

**Recent drugs:** Mannitol, glycerol or IV immune globulin (isotonic or hypertonic hyponatremia).

**Hypotonic hyponatremia:** Severely reduced glomerular filtration rate (GFR) and thiazide (or thiazide-type) diuretics.

**Is edema or ascites present?** Advanced heart failure or cirrhosis.

**Nonedematous patients with hypotonic hyponatremia:** Euvolemic or hypovolemic.

### Treatment

Patients with acute hyponatremia, most patients with severe hyponatremia (<120) and most patients with symptomatic hyponatremia should be treated in hospital settings that allow frequent assessments of the patient's neurologic condition.

**Four treatment goals** to prevent further declines in the serum Na concentration, to decrease intracranial pressure in patients at risk for developing brain herniation, to relieve symptoms of hyponatremia and to avoid excessive correction of hyponatremia in patients at risk for osmotic demyelination syndrome.

- Goal of initial therapy: Raise Na by 4 to 6 mEq/L in a 24-hour period.
- Acute hyponatremia or severe symptoms: This goal in <6 hours.

- Chronic, severe hyponatremia, the maximum rate of correction should be 8 mEq/L in any 24-hour period.

**Clinical Situations**

- Asymptomatic acute hyponatremia Na <130 mEq/L: 50 mL bolus of 3% hypertonic saline to prevent the serum sodium from falling further. Remeasure Na hourly to determine the need for additional therapy. Do not give these patients hypertonic saline if the hyponatremia is already autocorrecting due to a water diuresis.
- Symptomatic acute hyponatremia Na <130 mEq/L: Symptoms that might be due to increased intracranial pressure (seizures, obtundation, coma, respiratory arrest, headache, nausea, vomiting, tremors, gait or movement disturbances, or confusion) with a 100 mL bolus of 3% saline, followed, if symptoms persist, with up to two additional 100 mL doses (to a total dose of 300 mL) over the course of 30 minutes.
- Chronic hyponatremia and Na <130 mEq/L.

*Severe symptoms of hyponatremia or in those with known intracranial pathology (such as recent traumatic brain injury, recent intracranial surgery or hemorrhage, or an intracranial neoplasm or other space-occupying lesion):* Treat with a 100 mL bolus of 3% saline followed, if symptoms persist, by up to two additional 100 mL doses (to a total dose of 300 mL).

*Asymptomatic or have mild-to-moderate symptoms and who have moderate hyponatremia (120-129 mEq/L):* Take only those measures that are broadly applicable to all hyponatremic patients (identify and discontinue drugs that could be contributing to hyponatremia; identify and, if possible, reverse the cause of hyponatremia; and limit further intake of water).

*Asymptomatic or have mild-to-moderate symptoms and who have severe hyponatremia (<120 mEq/L):* Give IV 3% saline beginning at a rate of 15-30 mL/hour. In addition, among those with reversible causes of hyponatremia who are likely to develop a water diuresis during the course of therapy, or in those who are at high risk of developing osmotic demyelination syndrome (ODS), desmopressin (dDAVP) should be initiated simultaneously to prevent overly rapid correction.

**Follow-up**

- Hypertonic saline should be discontinued once the daily correction goal of 4-6 mEq/L has been achieved.
- Fluid restriction to below the level of urine output is indicated for the treatment of symptomatic or severe hyponatremia in edematous states (such as heart failure and cirrhosis), syndrome of inappropriate ADH (SIADH), advanced renal impairment and primary polydipsia. In patients with a highly concentrated urine (e.g., 500 mOsmol/kg or higher), fluid restriction alone may be insufficient to correct hyponatremia.
- Depending upon the etiology: Loop diuretics, oral salt tablets, urea, K supplementation or vasopressin receptor antagonists (tolvaptan for up to 30 days, not in liver disease).

**Oral salt**

Nine grams of oral salt provides a similar quantity of sodium as 1 L of isotonic saline (154 mEq) but without any water; 1 g of oral salt is equivalent to 35 mL of 3% saline. Oral salt tablets should not be given to edematous patients (e.g., those with heart failure, cirrhosis).

- A new paper in the *New England Journal of Medicine* offers a blueprint for how doctors can use artificial intelligence to help them diagnose diseases. The authors outline the benefits of machine learning to reduce physician error and streamline the health care system. They also highlight the challenges of using AI in medicine — cautioning that even machines can't be perfect.
- Ketamine's rapid antidepressant effects and its recent approval by the US FDA has clinicians and patients alike buzzing with excitement.
- The US Surgeon General's office estimates that more than 20 million people have a substance use disorder.
- In a long-term prospective study of more than 8000 British civil servants followed for almost 25 years, investigators found no significant association between following a healthier diet in midlife and a lower risk for incident dementia or cognitive decline



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