

SERUM TIMES

Monthly | Volume VIII | Issue XI | November, 2023

SERUM MEDICAL BULLETIN

From the desk of the Editor-in-Chief

Dear Doctors/Readers,

Hope you are well both physically & mentally. We have passed one of the major festivals of India, Durga Puja & Lakshmi Puja. Kali Puja & Deepawali, which are celebrated most widely in India are coming. These two things should be borne in mind at this time. One, this has been a festival of lamps & lights. Hindus celebrate this day to mark the return of Rama, Sita, & Lakshmana to Ayodhya from a 14-year exile after defeating Ravana. In many cases, accidents occur that are related to fire. So please be very cautious about lights and fire.



Two, quite a huge amount of burning & bursting of crackers has severe health consequences. A study done by the Pune-based Chest Research Foundation and students from the interdisciplinary School of Health Sciences of the University of Pune & result released in 2016, observed that some crackers emit particulate matter (PM) far beyond the permissible limit set by the World Health Organization (WHO). One example put forward by the study would make the matter vivid. A snake tablet produced the highest peak of PM 2.5 in just 9 seconds which is equal to smoke from 464 cigarettes. There were many examples of the health hazards of bursting crackers cited in the report.

Several studies have observed that firecrackers release toxic & lethal gases like nitrogen dioxide, sulphur dioxide & carbon monoxide. All these are dangerous for our health. So, we request you to avoid firecrackers smoke.

The danger of dengue has been rising in West Bengal. It is reported (11th October, Times of India) that dengue cases in Kolkata had increased by almost three times to 41,410 in the last four weeks. Many experts think that it will go on rising till October. The situation in North 24 Parganas is more severe. So, take precautions from mosquito biting.

In this issue, we are going to discuss a special topic. This year Nobel Prize for Medicine & Physiology has gone to Hungarian biochemist Katalin Kariko & American physician-scientist Drew Weissman. Kariko is only the 13th woman to win the prize. The citation of the Nobel mentions that they have been awarded the prize for the "discoveries concerning nucleoside base modification that enabled the development of effective mRNA vaccines against COVID-19". The citation also mentions the pandemic shows the effect mRNA vaccines had on their evolution as well as how the global disaster became an opportunity for the vaccine technology to showcase its potential.

The next story will elaborate it in some details. Wish you again a happy Deepawali and Kali puja!

With thanks

Sanjib Acharya

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Covid Vaccine Pioneers get Medicine Nobel in 2023

The Physiology and Medicine Nobel 2023 goes to Katalin Kariko and Drew Weissman. Their research led to the development of vaccines that were administered to billions around the world to save people from the COVID-19 pandemic. These two scientists did not directly discover COVID-19 vaccines. But COVID-19 vaccines were based on the discovery of the use of mRNA in cells and Kariko and Weissman discovered it about two decades ago. Their work enabled potent Covid vaccines to be made in less than a year.

What was the new discovery of Kariko and Weissman?

It was an established idea that mRNA cannot be usable in human or living cells. These are destroyed whenever administered in the cells. The mRNA was delicate, so much so that when it was introduced to cells, the cells instantly destroyed it. The two scientists told New York Times reporters (2nd October) that their countless experiments failed. But they saw the potential of their work. Actually, their problem was that the immune system interprets mRNA as an invading pathogen and attacks that, sickening the animals while destroying the mRNA.

But eventually, the scientists discovered that cells protect their own mRNA with a specific chemical modification. They tried making the same change to mRNA synthesized in the lab before injecting it into cells. In that case, it worked, that is, the mRNA was taken up by cells without provoking an immune response.



The result

Kariko and Weissman's discovery, according to the panel that awarded the prize, "fundamentally changed our understanding of how mRNA interacts with our immune system that contributed to the unprecedented rate of vaccine development during one of the greatest threats to human health in modern times."

Use of Kariko and Weissman's discovery to treat other serious diseases

It is reported that vaccines using mRNA technology were being developed against a number of diseases, including influenza, malaria, and HIV. These remained difficult earlier to inoculate against. Personalized cancer vaccines have also shown promise. They use mRNA tailored to an individual patient's immune system to attack proteins on the tumour.

Kariko is the 13th woman to be awarded the Nobel Prize in Physiology and Medicine since 1901. It is reported that out of a total of 227 persons who have been awarded the prize, there are only 13 scientists who are women. So, women are still disproportionately represented in the field of science.



Kidney damages are associated with heart diseases- a new study observes

The story of the new research

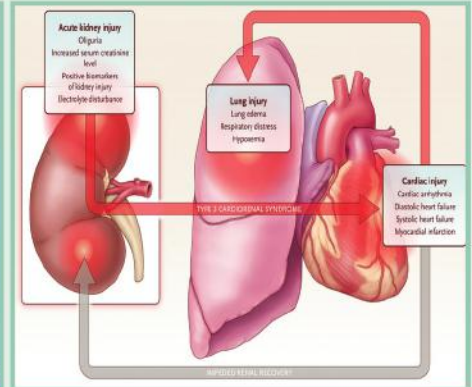
It is a long-known fact that kidney disease has been a risk factor for cardiovascular diseases. However, new research observes that different types of kidney diseases are associated with a greater chance of developing heart diseases. The new study has been done by the scientists of Brigham and Women's Hospital in Boston, USA. The researchers also observed that people diagnosed with vascular kidney diseases, diabetic kidney disease, or greater severity of chronic kidney lesions had also correlated with an increased risk of cardiovascular issues. It is known that the study was recently published in JAMA Cardiology.

Reason behind as a risk factor for cardiovascular diseases

It is reported in Medical News Today (12 May 2023) that Dr. Leo F Buckley, a member of the research team said, that people with chronic kidney diseases often would have diabetes, high blood pressure, and obesity which were well-known risk factors for heart diseases. Secondly, there were other reasons specific to chronic kidney disease such as a building up of toxins that would normally be cleared by kidneys.

Statistical findings in the research

The researchers noted that over a median of 5.5 years of follow-up, major cardiovascular events-including heart failure stroke, heart attack, and death- had occurred in 126 study participants.



Concrete findings, as reportedly told by Dr. Buckley

Upon further investigation, two specific types of kidney damage were associated with the risk of heart disease. One was mesangial expansion which was an extra build-up of waste in the kidney's filtration system. Two had been arteriolar sclerosis. This would occur when the walls of the small blood vessel in the kidney thicken and blood could not flow freely.

Arteriolar sclerosis confirmed researchers' suspicion that blood vessel damage could lead to heart disease while mesangial expansion was related to diabetes. Therefore, that might explain why mesangial expansion was a primary finding.

Importance of the study

After the publication of the study, some specialists reportedly commented that the study would help to confirm that microscopic changes in the kidney tissue were also associated with an increased risk of developing heart diseases, including coronary artery disease, heart failure, stroke, and death.



CSR Activities & Events of SERUM throughout October, 2023



Oct 1: Sri Sanjib Acharya at the Khuti Puja of Amherst Street Sadharan Sri Sri Kalipuja Committee



Oct 1: Sri Sanjib Acharya at the Health Camp organised by Babathakurtala Puja Committee



Oct 13: Clothes distribution to the loaders & porters of Kumartuli at Kumartuli MritShilpi Sanskriti Samity



Oct 13: Food materials and clothes were distributed to the underprivileged people



Oct 16: Sri Sanjib Acharya at the inauguration of Halderpara Friends Association Durga Puja where Thalassemia Patients received Medicines



Oct 17: Handover of lifesaving Thalassaemia Medicines to 35 Thalassaemia Patients



Oct 21: SERUM Sharod Baran, 2023 - Prize Distribution



Oct 17: Inauguration of Durga Puja of Lala Bagan Nabankur



Oct 19: Inauguration of Durga Puja at Hari Ghosh St., Argha.



An initiative of **SSERUM Analysis Centre (P) Ltd.**

This is a Medical Bulletin. Edited, compiled & published by Editorial Board for and on behalf of S SERUM Analysis Centre (P) Ltd., 82/4B, Bidhan Sarani, Kolkata 700004. Chief Editor: Sanjib Acharya. Website: serumanalysiscentre.com e-Mail: serum.kol@gmail.com Phone: +91 62895 32188 / 98302 74990 / 98300 16594

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