

# SERUM TIMES

Monthly | Volume VIII | Issue X | October, 2023

## SERUM MEDICAL BULLETIN

### From the desk of the Editor-in-Chief

Dear Doctors/Readers,

We have entered into the festival season. We think it starts with Vishwakarma puja and ends after Saraswati puja. But Durga puja is very special. This is because, as a festival, it has got global recognition. We all like to enjoy the festivals. At the same time, we have the responsibility to keep ourselves physically and mentally safe. We have to be cautious about eating outside food, avoiding unnecessary excess physical stress to enjoy festivals, etc. Try to protect yourself from viral fever or something similar to that in the festivals.



West Bengal has been highly affected by dengue infection. Kolkata is one of the most affected places in Bengal. The Mayor of Kolkata reportedly said on September 22 that the number of dengue infections had been at 2700 the week before. But it had increased to 3,802 in that week. He expressed his concern over the rise of cases of dengue in Kolkata as well as elsewhere.

In Kerala Nipah virus was active in some parts of Kerala, particularly, in Kozhikode for several weeks. But at present normalcy is slowly returning to Kozhikode. Restrictions were imposed in the affected district in the wake of the third Nipah episode there.

In this issue, we are going to discuss a rare disease that may happen in the very early months of a newborn baby. This is Neonatal Diabetes mellitus (NDM). What is that disease? It occurs after the neonatal period, that is, the first four weeks of a child's life. The NDM results from complex interactions between both environmental and completely penetrating genetic factors. The latest advanced studies have confirmed that diabetes that occurs very early in life is most often due to underlying monogenic defects, disorders, caused by mutations in a single gene. But it is occurring very rarely. On average one NDM is found in 90,000 to 150,000 live births. Science Direct magazine (1 March 2018) mentioned that there were more than 20 known genetic causes for NDM. The article also pointed out, "It is important to diagnose monogenic diabetes as early as possible, as it can predict the clinical course, explain additional clinical features, and guide appropriate management for patients."

The next story will discuss the matter in some detail. We again request you to stay safe and do not involve yourselves in the festival enjoyment in such a way that may harm you in any way.

With best wishes,

Sanjib Acharya

For more details, visit: [www.serumanalysiscentre.com](http://www.serumanalysiscentre.com) | Follow us at



FREE distribution for Doctors and Medical Personnels



## NDM is a rare disease, incurable but can be monitored

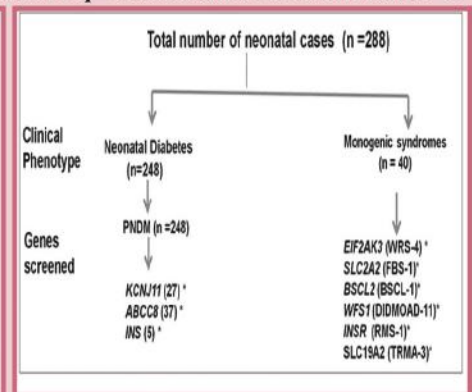
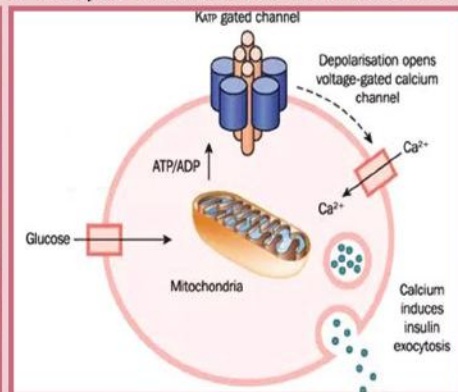
NDM (Neonatal Diabetes Mellitus) is a disease that affects an infant & their body's ability to produce or use insulin. A kind of diabetes, i.e., monogenic (regulated by a single gene) & arises in the first 6 months of life. Infants do not produce enough insulin leading to an increase in glucose accumulation & occurs due to the presence of severe hyperglycaemia associated with insufficient or no circulating insulin. This occurs mainly before 6 months of age and rarely between 6 months & one year.

### Genetic mechanism

Frontier Health magazine (30 September 2020) mentions that the disease is explained by 2 major groups of mechanism malformation of the pancreas with altered insulin-secreting cells development/survival or abnormal function of the existing pancreas beta cell. The most frequent genetic causes of NDM with abnormal beta cell function are abnormalities of the 6q24 locus & mutations of the ABCC8 or KCNJ11 genes coding for the potassium channel in the pancreatic beta cell. Other genes are associated with the pancreas malformation or insufficient beta cells.

### On long term treatment

Clinically, compared to patients with an ABCC8 or KCNJ11 mutation, patients with a 6q24 abnormality have lower birth weight & height, are younger at diagnosis & remission, and have a higher malformation frequency. Patients with an ABCC8 or KCNJ11 mutation have neurological & neuropsychological disorders in all those tested carefully. Up to 86% of patients who go into remission have recurrent diabetes when they reach puberty, with no difference due to their genetic origin. All these results reinforce the importance of prolonged follow-up by a multidisciplinary paediatric team, & later doctors specializing in adult medicine. 90% of the patients with an ABCC8 or KCNJ11 mutation as well as those with 6q24 anomalies are amenable to



a successful switch from insulin injection to oral sulfonylureas.

### Treatment

Neonates with diabetes are initially treated by intravenous infusion of insulin, with a dose of 0.05 units/kilogram/hour commonly used. Treatment options depend on the underlying genetic variations of each person with neonatal diabetes. The most common mutations underlying neonatal diabetes – KCNJ11 and ABCC8 variants – can be treated with sulfonylurea alone, eventually transitioning off of insulin completely. In many cases, neonatal diabetes may be treated with oral sulfonylurea such as glyburide.

### Conclusion

NDM is caused by a single gene mutation. These patients will most often present within the first six months of life but, less commonly, may present at up to 12 months of life. Early clarification of the molecular cause by genetic testing is paramount.

Patients with channel mutations, such as KCNJ11 and ABCC8, can be transitioned to SU agents, allowing for simplified administration, decreased treatment costs, and potential neuro-developmental improvements. Genetic testing may also guide the treatment of the disease.



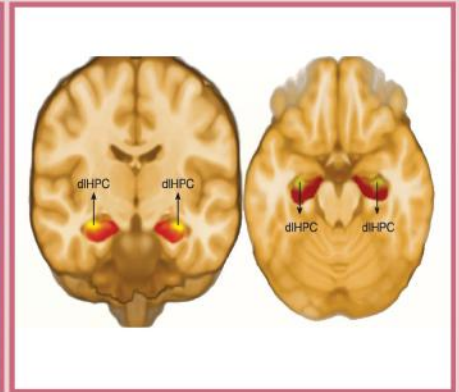
## Link between memory & appetite in the brain to explain obesity identified

A group of researchers from the University of Pennsylvania School of Medicine have been able to identify a link between memory and appetite in the human brain to explain obesity. The researchers pointed out a binge eating disorder (BED). They observed that disrupted connections between memory and appetite-regulating brain circuits are directly proportional to body mass index (BMI). It has been noted, particularly in patients, who suffer from disorders or overeating that can lead to obesity such as BED.

In the clinical term, it has been observed that there are individuals who are obese have impaired connections between the dorsolateral hippocampus (dIHPC) and the lateral hypothalamus (LH). That may impact their ability to control or regulate emotional responses when anticipating rewarding meals or treats.

The specific discovery and its departure from previous knowledge

The dIHPC is located in the region of the brain that processes memory, and the LH is in the region of the brain that is responsible for keeping the body in a stable state, called homeostasis. A report (Science Daily, 30 August 2023) on this discovery pointed out that in the study, researchers were able to evaluate patients whose brains were already being monitored electrically in the Epilepsy Monitoring Unit. Researchers monitored brain activity as patients anticipated and then received a sweet treat a piece of chocolate or milkshake, for example. They found that both the dIHPC and the LH activated simultaneously when participants anticipated receiving the rewarding meal. These researchers confirmed using stimulation techniques that this specific zone of the hippocampus, the



dIHPC, and LH exhibited extremely strong connectivity, as well.

One of the research team leaders, Dr. Halpern reportedly said, "We hope to be able to use this research to identify which individuals are likely to develop obesity later in life, and to develop novel therapies-both invasive or not- to help improve the function of this critical circuit that seems to go awry in patients who are obese".



## CSR Activities & Events of SERUM throughout September, 2023



Sept 3: Thalassemia Awareness Camp organized by Swajan



Sept 9: Voluntary Blood Donation & Health Camp organised by Royal Club.



Sept 10: Blood Donation Camp org. by Swadhinata Divas Udjapan Samity



Sept 10: Blood Donation Camp organized by Netaji Subhas Mission



Sept 10: Health Checkup & Blood Donation Camp org by Sovabazar Gurpatti Welfare Society



Sept 11: Thalassemia Awareness Camp at Kadihati Kalinath Mukherjee High School



Sept 18: Celebration of Vishwakarma Puja at SERUM Hati Bagan



Sept 19: Unveiling of the replica of SERUM Sharod Baran, 2023 & hoarding competition price distribution at Press Club, Kolkata



Sept 21: Sri Sanjib Acharya visited the Arambagh zone



Sept 23: Birthday Celebration of Sri Sanjib Acharya, CMD, SERUM Group at SERUM Hati bagan



Sept 28: Know Your Heart!! A seminar on Heart by Dr. Prabhat Bhattacharya on the eve of World Heart Day



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

Information & Local Booking Centre,  
**SERUM Group**