Research Shows Vitamin D Levels Drop After Pediatric Heart Surgery, Increasing Sickness

Until now, there has been no research dedicated to the importance of Vitamin D supplementation in children with congenital heart disease (CHD). However, over the past few years, researchers at the Children's Hospital of Eastern Ontario (CHEO) Research Institute and Cardiovascular Surgery Program teamed with the Canadian Critical Care Trials Group to understand the impact of cardiac surgery on the Vitamin D status of infants and children, to be printed next month in *Anesthesiology*.

"The importance of Vitamin D levels and supplementation in healthy infants and children is well established," said Dr. Dayre McNally, a clinical researcher and intensivist at CHEO and assistant professor in the Department of Pediatrics at the University of Ottawa. "Now we have more compelling evidence that children with congenital heart disease require even higher levels of Vitamin D intake in the months preceding surgery."

This evidence comes from a study that looked at 58 children who had cardiac surgery at CHEO. Blood was collected at the time of admission to the Pediatric Intensive Care Unit immediately following surgery, and revealed that almost all of the children had low Vitamin D levels. With additional tests, the researchers were able to determine why. "Our results show that almost all children are Vitamin D deficient post-operatively as a result of borderline acceptable levels prior to surgery, combined with a 40% decline during the operation."

The role of Vitamin D in the growth and maintenance of bone health is well known to the public. However, recent studies have also suggested Vitamin D to be important for the proper functioning of other organs including the heart, lungs and immune systems. This study by Dr. McNally confirms this, as patients with lower post-operative Vitamin D levels were more prone to requiring more life-sustaining therapies (medications to support heart function, longer duration of assisted breathing) and stayed in the Intensive Care Unit for longer periods of time.

Although Dr. McNally and his co-investigators are concerned with the high rates of post-operative vitamin D deficiency they also view the finding as positive. "The children and families who generously participated in this research have provided us with important information that may help the next generation of children maintain better health and recover quicker following cardiac surgery," explained Dr. McNally. The CHEO Research Institute and Canadian Critical Care Trials Group have wasted little time and have already designed a novel study with the goal of identifying a new approach to Vitamin D supplementation in children with CHD.

This study was conducted by Dr. Dayre McNally, Dr. Kusum Menon, Dr. Pranesh Chakraborty, Lawrence Fisher, Kathryn Williams, Dr. Osama Al-Dirbashi, Tara

Girolamo, Dr. Gyaandeo Maharajh, and Dr. Dermot Doherty. It was supported with grants from the CHEO Research Institute and Department of Anesthesiology at the University of Ottawa. The Heart and Stroke Foundation of Canada recently awarded Dr. McNally and the research team a grant to assist with their program of research on Vitamin D supplementation in children with CHD.

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