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Perspective

A Brief Note on Congenital Heart Disease

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DESCRIPTION

Congenital heart disease refers to structural abnormalities of the heart that arise before birth. During pregnancy, such abnormalities can occur in the foetus as it develops in the uterus. Congenital cardiac disease affects about 500,000 adults in the United States. Due to genetic or chromosomal abnormalities, such as Down syndrome, one out of every 100 children suffers heart problems. Excessive alcohol consumption and medication use during pregnancy, as well as maternal viral infection, such as Rubella virus or measles (German) in the first trimester, are all risk factors for congenital heart disease in children, with the risk increasing if a parent or sibling has a congenital heart defect.

Heart valve defects, atrial and ventricular septa defects, stenosis, heart muscle abnormalities, and a hole in the heart's inner wall cause blood circulation problems, heart failure, and death. Shortness of breath and limited capacity to exercise are common signs of congenital heart disease, as are exhaustion and an abnormal sound in the heart known as a heart murmur, which is confirmed by a physician while listening to the heart beats. Congenital heart disease is diagnosed using echocardiograms, Transesophageal echocardiograms, electrocardiograms, chest X-rays, cardiac catheterization, and magnetic resonance imaging (MRI).

Several treatments are administered based on the severity of the disease, and in critical cases, such as endocarditis, a catheter technique and surgery are required to replace heart valves or undergo heart transplantation. To conduct a genetic study, DNA is collected from the blood, then DNA sequence analysis is performed, and any errors in the nucleotide sequence of DNA are identified. Genes on chromosome 1 reveal certain nucleotide sequence abnormalities in congenital cardiac disease.

TREATMENT OF CONGENITAL HEART DISEASE

Catheter method

Many heart surgeons have successfully employed the catheter technique to treat heart problems such as atrial septal defect (ASD) and pulmonary valve stenosis for the past 20 years. A catheter is placed into a vein in the patient's groyne (upper thigh) and threaded to the heart's septum for ASD repair. The catheter is linked to an umbrella-like device. The gadget is pushed out of the catheter when it reaches the septum. The device is fixed in place and the catheter is withdrawn from the body after it seals the hole between the atria. Normal tissue grows in and on the device after 6 months, and the closure device does not need to be replaced as the child grows.

Surgery method

Patients who have a significant cardiac defect that cannot be fixed with a catheter have open-heart surgery. Depending on the severity of the congenital heart condition, one or more cardiac operations are usually required. Open-heart surgery can be used to heal holes in the heart with stitches or a patch, repair or replace heart valves, expand arteries or openings to heart valves, and treat complicated defects including difficulties with the position or formation of blood vessels around the heart. Rarely, newborns are born with several abnormalities that are too complicated to fix, necessitating the implantation of a new heart. In some circumstances, heart transplant surgery may be necessary.

The most frequent congenital defect in newborns and adolescents is congenital heart disease. Heart genetics research has progressed in the last 40 years, with human genome analyses of uncommon Mendelian congenital heart disease by gene sequencing and blood DNA analysis of heart disease cohorts showing modest progress.

Congenital heart disease can be treated with catheter and surgery treatments to fix heart abnormalities. ECG, X-ray, and other modalities can be used to diagnose this condition. In

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children, teenagers, and adults, certain drugs can help protect the heart from future abnormalities or damage, as well as heart failure. Future research of blood DNA sequences and the human genome will be required to better understand hereditary abnormalities and how gene therapy might be used to correct them. This heart condition necessitates the development of novel drugs.