Severe Valvular Aortic Stenosis and Homozygous Familial Hypercholesterolemia in a 8 Year Old Female Child - Case Report :

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Introduction:

Homozygous Familial hypercholesterolemia (HoFH) is a rare defect of lipid metabolism characterized by markedly elevated level of serum total cholesterol with normal triglycerides level , familial history and skin xanthoma . It is an inherited defect of the receptor for plasma low density lipoprotein and is associated with elevated plasma low density lipoprotein cholesterol in blood.[1] These patients develop lipid deposition at unusual sites early in the life. The most lethal manifestation is premature coronary atherosclerosis and aortic valvular and supra valvular stenosis.[2,3] We report a case of severe aortic stenosis with history of Homozygous familial hypercholesterolemia .

Case Report :

An eight years old female child born of first degree consanguineous marriage presented with the compliants of chest pain and exertional dyspnoea. On examination she had no skin xanthoma . On auscultation a grade three ejection systolic murmur was audible in the aortic area.

Lipid profile was grossly deranged both for patient and parents. Patient's total cholesterol (Random) was 513 mg/dl, low density lipoprotein (LDL) was 440 mg, high density lipoprotein (HDL) was 57 mg/dl , triglycerides were 160 mg/dl. Both parents cholesterol status was estimated. They had high concentration of total and LDL cholesterol while high density cholesterol and triglycerides were normal. Echocardiographic evaluation of the patient showed severe valvular aortic stenosis with a peak gradient of 91 mmHg. Leaflets were thickened and echogenic. His parents were not willing to undergo further evaluation and management and lost further follow-up. Valvular aortic stenosis is rarer familial hypercholesterolemia specially in young children. It is the first reported case in our Country.

Fig-1 : *Child born of a first degree consanguineous marriage presented with dyslipidemia and severe valvular aortic stenosis*

Discussion:

Familial hypercholesterolemia (FH) is an autosomal dominant inherited lipid disorder that causes marked elevation of serum total cholesterol and low density lipoprotein cholesterol. Affected parents have either the heterozygous phenotype with a prevalence of approximately 1 case per 500 person or the homozygous phenotype with a prevalence of 1 case per million. This primary defect is a mutation for the receptor for plasma low density lipoprotein in

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the hepatocytes. This causes a decrease in the number of functioning low density lipoprotien receptor which is the primary determinant of hepatic low density lipoprotien uptake. Excess low density lipoprotien accumulation occurs in the body tissues.

In homozygous familial hypercholesterolemia (HoFH) individuals the condition is severe. Atherosclerosis begins before puberty and is severe and widespread. The patients are at risk for early coronary events and sudden death.[3.6] Survival beyond young adulthood is unlikely. Lipid infiltration with consequent thickening of the aortic cusps is considered to be the unique features in homozygotes.[2-3]

The diagnosis of familial hypercholesterolemia is based primarily on the finding of serum total cholesterol and low density lipoprotein cholesterol elevation in the absence of secondary causes of hypercholesterolemia . The definitive diagnosis can be made only with gene or receptor analysis but is expensive and is unnecessary. Our reported case is a patient of homogenous familial hypercholesterolemia (HoFH). Both parents are dyslipidaemic and she borns of a first degree consanguinous marriage.

Recently improved prognosis is expected in patients with homozygous familial hypercholesterolemia as a result of LDL apheresis, more potent statins and a newly introduced cholesterol absorption inhibitor.[5,6,7]

Cardiovascular involvement in patients with homozyzous familial hypercholesterolemia (HoFH) is well established. Stenosis of aortic root including the aortic valve is considered to be cardinal.[8] Only a few cases of surgical repair have been reported to this condition probably due to the short life of patient and the difficulty to the operation.[9-11]

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