

A Case Report of Mucopolysaccharidoses Type 4 (Morquio Syndrome)

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Abstract: Mucopolysaccharidoses are group of autosomal recessive metabolic disorders caused by a deficiency of the lysosomal enzymes needed to degrade glycosaminoglycans (GAGs) like heparin sulfate, dermatan sulfate and keratin sulfate. Incidence: 3.5-4.5 in 100, 000 births. Here we report a case of 7 year old female child born to a 3rd degree consanguinous couple presented with symptoms suggestive of cardiac failure and delayed milestones. On examination child had coarse facial features, megalocornea, short stature, joint stiffness, kyphoscoliosis, absent vaginal orifice. X ray features: rotational instability of atlantoaxial joint, scoliosis of dorsolumbar spine, anterior beaking of vertebral bodies, bullet shaped metacarpals and cardiomegaly. 2D Echo shows mitral valve prolapse and severe Mitral Regurgitation. Usg Abdomen-normal. Urinary glycosaminoglycans reports are positive. Enzymatic analysis revealed low levels of glucose 6 phosphatase. Child is on treatment with digoxin, enalapril and furosemide. Haemotopoietic stem cell transplantation and enzyme replacement therapy are other treatment options. Reconstructive vaginoplasty was advised

Keywords: mucopolysaccharidoses, Dysostosis multiplex, Enzyme therapy

1. Introduction

Mucopolysaccharidoses (MPS) are metabolic diseases that develop due to enzyme deficiency, genetically transmitted and seen in one of 20, 000 births in society, resulting in damage to various organs in the body with the accumulation of glycosaminoglycan (GAG) in lysosomes¹. Mucopolysaccharidoses have 7 [1, 2, 3, 4, 6, 7, 9] types according to the affected enzyme. Type 4 is also divided into A and B types. In mucopolysaccharidoses bone, joint, heart, lung, gastrointestinal system and central nervous system can be affected

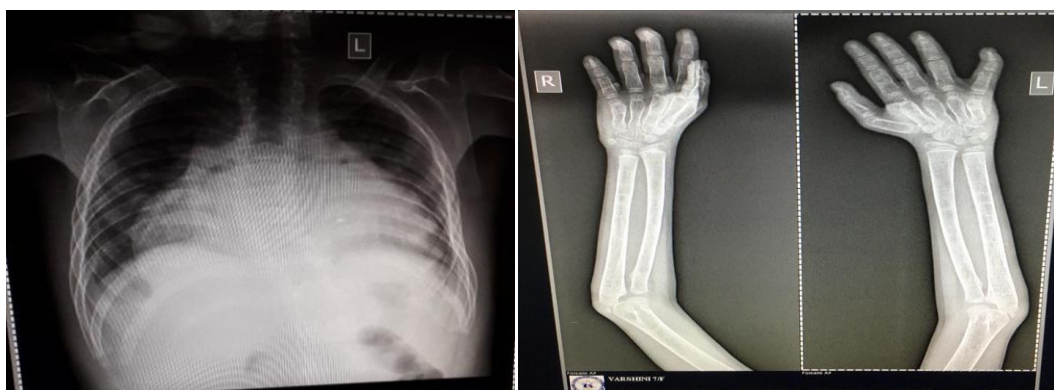
2. Case Report

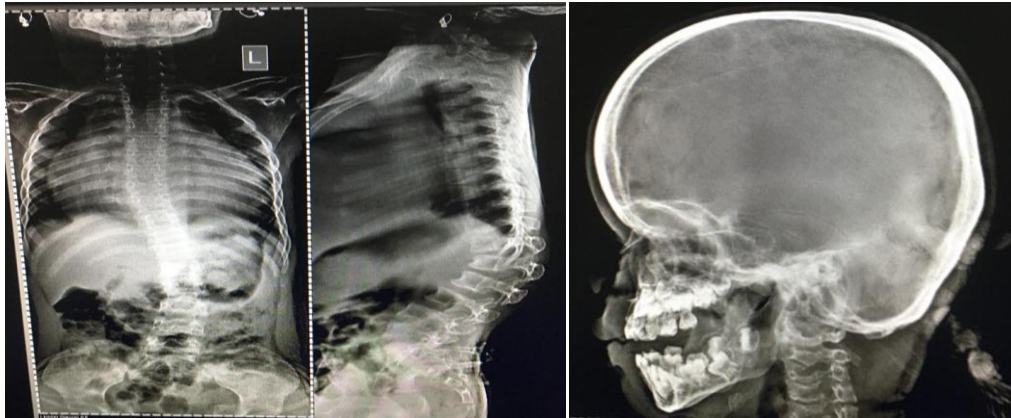
Here is a case of 7 year old female child born to a 3rd degree consanguinous couple presented to our hospital with

complaints of short stature, bone deformities and symptoms of heart failure.

Physical examination: Weight: 13 kg (<3p), Height : 103 cm (<3p), child had coarse facial features, megalocornea, hypertelorism, flat nasal bridge, dysplastic teeth, disproportionate short stature, joint stiffness, pectus carinatum, kyphoscoliosis, absent vaginal orifice. Abdominal examination shows hepatomegaly with liver span of 12cm. The child's neurodevelopment was appropriate for age.

X ray features include rotational subluxation of atlantoaxial joint, scoliosis of dorsolumbar spine, anterior beaking of vertebral bodies, bullet shaped metacarpals and cardiomegaly





2D echo shows mitral valve prolapse and severe Mitral Regurgitation. Urine glycosaminoglycans: positive (keratan sulfate). Enzymatic analysis revealed low levels of glucose-6-phosphatase [40 pmol/mg/hr] (n: 400-2000) which made the definitive diagnosis of MPS type 4

3. Discussion

Type 4A is a disease encoded by the 16q24.3 gene, associated with galactosamine-6-sulfatase (GALNS) enzyme deficiency, whereas Type 4B occurs due to lack of beta galactosidase. In both types of disease, keratan sulphate and chondroitin 6 sulphate accumulate². They are inherited as autosomal recessive disorders. Morquio syndrome is characterized by short stature, short neck, joint loosening and bone involvement evident by one year of age³. Pectus carinatum and genu valgum are present in majority of patients. Dysostosis multiplex, a characteristic bone finding is present in majority of cases.

Patients with morquio syndrome have mild to severe symptoms depending on residual enzyme activity. In severe forms there is growth restriction and they are lost with respiratory insufficiency at 3rd to 4th decades. Milder forms can survive upto seventies⁴

In our case, patient had bone radiographic findings specific to the disease called dysostosis multiplex are present with no neurological involvement. Patient had heart involvement in the form of severe mitral regurgitation and mitral valve prolapsed and the patient was followed by cardiology and orthopedics clinics.

Clinical course of the disease can be slowed down by enzyme replacement therapy. Commencement of treatment at an earlier age gives more successful results. Starting the enzyme treatment soon after the patient is identified will reduce morbidity and mortality. Identification of carriers and avoidance of new patients by genetic counseling in new pregnancies is crucial as the high treatment costs are considered and treatment is only causing the clinical progression of disease to slow down. Gene therapy for this disease is also actual, and studies are ongoing. Prognosis depends on severity of disease and on the quality of care, which can allow patients to survive beyond the age of fifty.

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