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Case Report

Morquio syndrome or something cryptic: think!

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ABSTRACT

Morquio syndrome (MS) or mucopolysaccharidosis type IV A is an autosomal recessive lysosomal storage disorder caused by deficiency of N-acetylgalactosamine-6-sulfate sulfatase. The disorder is marked by characteristic physical features, skeletal abnormalities and normal intellect. We report a nine year old boy who presented with coarse facial features, barrel shaped chest, rhizomelic limb shortening and intellectual disability. Along with facial features, the initial radiological survey pointed to the diagnosis of MS. However when the urinary glycosaminoglycans came to be negative, the radiographs and clinical features were reviewed which led us to a rare syndrome with significantly different treatment and prognosis. A pediatrician should keep a high index of suspicion to pick up mimics of mucopolysaccharidosis as the variable prognosis and management protocol might be life saving in some cases.

Keywords: Mucopolysaccharidosis, Dyggve-Melchior-Clausen syndrome, Rhizomelia, Intellectual disability

INTRODUCTION

Morquio syndrome (MS) or mucopolysaccharidosis (MPS) type IV A is an autosomal recessive lysosomal storage disorder caused by deficiency of N-acetylgalactosamine-6-sulfate sulfatase.

This enzyme deficiency leads to progressive accumulation of excessive glycosaminoglycans (GAGs) in the lysosomes of bone, cartilage, and ligaments leading to specific deformities.[1]

It is distinguished from other MPS by absence of corneal clouding and intellectual disability. The birth prevalence of MPS type IV ranges from 1 per 71 000 to 1 per 500 000.[2] Although the pattern of clinical features is very specific, rarely some rare disorders might masquerade as MS. In such scenario the clinician must keep his mind open to other possibilities.

CASE REPORT

A nine year old child was brought to our out-patient department with complaints of intellectual disability and severe bony deformities. Child was born out of a second degree consanguineous marriage at 39 weeks of gestation with a birth weight of 3 kg by normal vaginal delivery. Antenatal scans were unremarkable and perinatal period remained uneventful. Apart from some issues of feed regurgitation and delayed milestones, the child remained well during the first year. The child started walking with support at one and a half years of age. The parents noticed progressive valgus deformity of the knees after 2 years of age. From last two years, child had lost the ability to stand on his feet and developed knee-walking. Also there was history of shoulder dislocation in past which was managed by closed reduction.

On examination child had significant deformities. Coarse facial features were seen with a short forehead, prominent

ears, thick lips and micrognathia. Short trunk dwarfism was noted along with rhizomelic shortening upper limbs.

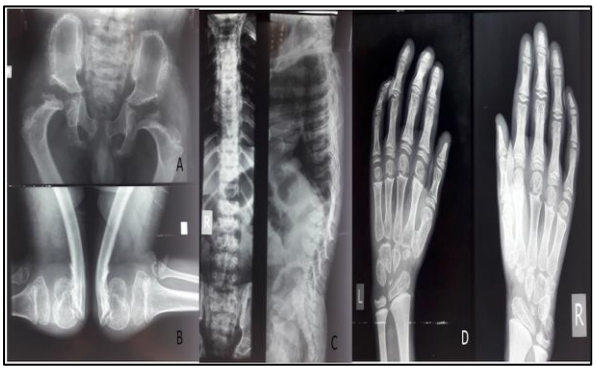

Figure 1: Radiographs of the patient showing irregular, lacy iliac crest with hypoplastic and wide acetabulae. (A) Femoral epiphysis are flattened and compressed with metaphyseal splaying. (B) Radiograph of the knee shows marked deformity with irregular cortical metaphyseal outline in bilateral lower ends of femur. (C) The spine shows platyspondyly and double humped appearance. (D) The hands show fewer and deformed carpal bones.

The height was 100 cm (below 3 SD as per the WHO growth charts) with an upper segment to lower segment ratio of 0.6:1. Pectus carinatum and flaring of costal margins was noted. Spine showed features of scoliosis with increased lumbar lordosis. In lower limbs a prominent genu valgus deformity was present along with hyper-extensible knee joints. Bilateral syndactyly of 2nd and 3rd toes was apparent. No organomegaly or corneal clouding was present. Genitalia were grossly normal. Neurological assessment revealed profound mental retardation with a social age of 11.3 months according to Vineland Social Maturity Scale (VSMS).

A radiographic skeletal survey was done. Chest radiograph showed widening of anterior ends of ribs, normal lung fields and normal bone mineralization. A radiograph of the dorsolumbar spine showed evidence of platyspondyly with antero-inferior beaking of vertebral bodies. A hypoplastic ilium with widened acetabulum and irregularity of iliac crest was present. Femoral epiphyseal flattening and compression was seen along with metaphyseal splaying. Carpal bones were absent on radiographs of wrist joint (Figure 1).

Management and outcome

With this child, who was a product of consanguinity, with short trunk dwarfism, rhizomelic limb shortening and dysostosis multiplex, MS or Type IV MPS was kept as the first possibility. Vision and hearing assessment were grossly normal. Echocardiography revealed no abnormality. Magnetic resonance imaging of brain showed thinning of corpus callosum. But to our astonishment, screening for urinary glycosaminoglycans (GAGs) came to be negative.

The findings of this case hitherto pointed to a disorder with autosomal recessive inheritance, spondyloepiphyseal dysplasia and intellectual disability. The radiographs were reviewed and additional findings of double hump with central indentation in dorsal-lumbar spine, and, lacy iliac crest were found. Due to the absence of urinary GAGs, progressive intellectual disability in child and consistent radiological features we arrived at a diagnosis of Dyggve-Melchior-Claussen (DMC) syndrome. Gene studies could not be done due to financial constraints.

DISCUSSION

DMC syndrome is a rare, autosomal recessive, progressive spondylo-epi-metaphyseal dysplasia (SEMD) caused by mutations in Dym gene mapped on chromosome 18q12-12. Till date, approximately 70 cases with this disorder have been reported world-wide, mostly from Egypt, Lebanon and Greenland and few from India.[3-5] It is a progressive SEMD in which abnormalities are not evident at birth. Feeding difficulties and skeletal abnormalities appear during childhood and progressively worsen along with deterioration of intellect.[6]

The deformities in DMC syndrome are almost indistinguishable from those seen in MS. MS is distinguished from other GAGs because of the absence of intellectual disability and corneal clouding. DMC, on the other hand, is characteristically marked by progressive intellectual disability.[7] Autosomal recessive pattern of inheritance, coarse facial features, hyperlaxity of the joints, short trunk dwarfism and rhizomelic limb shortening are common to both the diseases. Apart from dysostosis multiplex, certain specific radiological features like double hump in spine and lacy iliac crest are exclusive to DMC syndrome.[3,5] Absence of urinary GAGs should alert the clinician to consider this rare disorder. Another phenotype of the disorder, called SMC (Smith-McCort) syndrome has also been described, in which there is absence of intellectual disability.[5]

The distinction between the two disorders is important for the purpose of treatment and prognostication.[7,8] With the availability of enzyme replacement therapy, substrate reduction therapy and hematopoietic stem cell transplantation, partial improvement can be achieved in MS. The complications in MS are attributed to upper cervical instability and cord compression which are managed with early surgical intervention.[1] Compared to MS, the rates of survival with DMC syndrome are better; however, the quality of life is limited by bony significant bony deformities. Successful orthopedic surgeries have been performed for correction of deformities in many of these patients worldwide and must be undertaken when indicated.[5,9,10]

CONCLUSION

Even in a child presenting with typical features of mucopolysaccharidosis, a clinician must keep an open mind about other possibilities and should thoroughly investigate before prognosticating the parents. Presence and absence of intellectual disability is a key differentiating feature among mucopolysaccharidosis and any deviation from the typical pattern must be followed up by revisiting the clinical and radiological clues for missing links.

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REFERENCES

1. Tomatsu S, Yasuda E, Patel P. Morquio A Syndrome: Diagnosis and Current and Future Therapies. Pediatr Endocrinol Rev PER. 2014;12:141-51.
2. Biswas SN, Patra S, Chakraborty PP. Mucopolysaccharidosis type IVA (Morquio A): a close differential diagnosis of spondylo-epiphyseal dysplasia. BMJ Case Rep. 2017;2017:bcr2017221156.
3. Dyggve HV, Melchior JC, Clausen J. Morquio-Ullrich's Disease. Arch Dis Child. 1962;37(195):525-34.
4. Paupe V, Gilbert T, Le Merrer M, Munnich A. Recent advances in Dyggve-Melchior-Clausen syndrome. Mol Genet Metab. 2004;83:51-9.
5. Girisha KM, Cormier-Daire V, Heuertz S. Novel mutation and atlantoaxial dislocation in two siblings from India with Dyggve-Melchior-Clausen syndrome. Euro J Med Gen. 2008;51:251-6.
6. Kaufman RL, Rimoin DL, McAlister WH. The Dyggve-Melchior-Clausen syndrome. Birth Defects Orig Artic Ser. 1971;7(1):144-9.
7. Coëslier A, Boute-Bénéjean O, Moerman A, Fron D, Manouvrier-Hanu S. [Dyggve-Melchior-Clausen syndrome: differential diagnosis of mucopolysaccharidosis type IV or Morquio disease]. Archives de Pediatrie : Organe Officiel de la Societe Francaise de Pediatrie. 2001;8:838-42.
8. Rodríguez Rodríguez CM, Pineda Marfa M, Duque R, Cormier-Daire V. [Dyggve-Melchior-Clausen syndrome, diagnostic difficulty due to it similarity to Morquio disease]. Neurologia (Barcelona, Spain). 2007;22:126-9.
9. Gupta V, Kohli A, Dewan V. Dyggve melchior clausen syndrome. Indian Pediatr. 2010;47:973-5.
10. Kenis V, Baindurashvili A, Melchenko E, Grill F, Al Kaissi A. Management of progressive genu varum in a patient with Dyggve-Melchior-Clausen syndrome. Ger Med Sci. 2011;9:25.

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