Chanarin Dorfman Syndrome: Neonatal Diagnosis and 3-year Follow-up

Chanarin Dorfman syndrome is characterized by ichthyosis, leukocytic vacuolation (Jordan anomaly) and variable involvement of liver and neuromuscular system(1). About 33 patients are described till 2001(2), including three from India(3,4).

A 17-day-old girl, singleton full term AGA (2700 g), product of a nonconsanguineous marriage, presented with dry, scaly skin involving the entire body, including the face and flexural areas. The palms and soles were diffusely hyperkeratotic. Liver was palpable 11 cm (span 15 cm) below the costal margin, smooth and firm. The spleen was also palpable 3 cm and firm. There was no free fluid. Other systemic examination was normal.

Lipid profile was deranged with elevated triglycerides (123 mg/dL), decreased HDL 31 mg/dL, cholesterol 214 mg/dL, LDL and VLDL levels of 104 and 25 mg/dL, respectively. The liver functions were deranged with elevated enzymes (SGPT 146 U/L, SGOT 149U/L, ALP 859U/L). Prothrombin time was 33s (control: 13s) and PTTK was 28s (control: 12s). All hematological parameters were normal. The peripheral smear was normocytic, normochromic but revealed vacuolated neutrophils, characteristic of CDS (*Fig. 1*). The blood glucose, urea, electrolytes, calcium, phosphorous, lactate dehydrogenase and urinary examination was within normal limits. Brainstem evoked responses, ECG, EEG and CT (brain) did not reveal any abnormality. Parents and sibling did not have any cutaneous, hematological or biochemical stigmata suggestive of a carrier state.

Ultrasound of the abdomen revealed marked hepatomegaly with homogenously increased echotexture. Liver biopsy showed diffuse severe fatty changes in hepatocytes, moderate portal fibrosis with focal lobular inflammatory infiltrates. Skin biopsy revealed lamellar ichthyosis.

Symptomatic treatment was provided in the form of local application of emollients. After 6 months of exclusive breast feeding, a diet rich in medium chain triglycerides and deficient in long chain fatty acids was prescribed.

The child was observed to have normal growth and development in all spheres till 3 years of age. The girl weighs 10 kg with a height of 91 cm. Vision and hearing are normal. Skin continues to have lamellar ichthyosis that worsens during winters. Liver span increased (reaching upto 18 cm) over the first year of life, stabilised for 6 months thereafter; followed by a decreasing trend. The liver span now is 10 cm. Liver functions and triglycerides derangements persisted till 1.5 years of age (SGPT: 143U/L, SGOT: 156 U/L, PT: >2 min (control 12s), PTTK: >2 min (control 29s), cholesterol: 155 mg/dL, triglycerides: 396mg/dL, VLDL: 79 mg/dL, HDL: 12 mg/dL, and LDL 104 mg/dL) followed by a spontaneous improvement. At

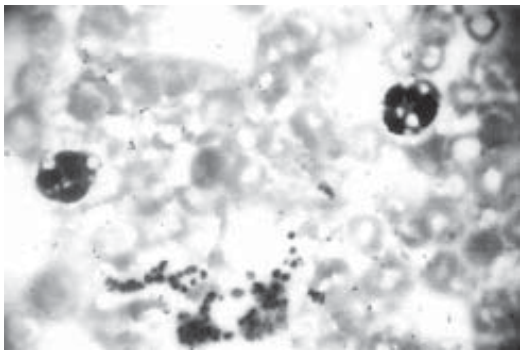

Fig. 1. Peripheral smear depicting large vacuoles in the neutrophils.

present, the biochemical profile is: SGPT: 18 U/L, SGOT: 26 U/L, PT: 15s (control 12s), PTTK, 29s (control 29s), cholesterol: 157 mg/dL, triglycerides: 71 mg/dL, VLDL: 14 mg/dL, HDL: 40 mg/dL, and LDL 71 mg/dL. However, the peripheral smear continues to have the diagnostic Jordan's anomaly in the neutrophils and eosinophils. Intracellular lipid inclusions can also be seen in Refsum's disease but this was excluded by the absence of ataxia, neuropathy and retinitis pigmentosa in our patient.

Besides the characteristic features, our case also had a small hemangioma over the left chest wall, hitherto unreported with this entity. Remission of liver involvement could be spontaneous or aided by our dietary program. All earlier cases reported from India had associated mental retardation(3,4). The overall frequency of mental retardation in CDS, however is only 24%. Lefevre, *et al.*(5) recently localized the genetic locus for CDS on chromosome 3p21. Eight distinct mutations are identified in the CGI-58 gene. The importance lies in the possibility of offering prenatal diagnosis for this disorder in the near future.

We will continue to observe the child for abnormal physical growth, learning difficulties, liver derangement, sensori-neural deafness and visual handicaps as they are reported to surface even in the adult life.

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