Adult- Onset Centronuclear Myopathy

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Abstract

Centronuclear myopathy (CNM) is a rare congenital myopathy that is characterized by centrally placed nuclei in the muscle fibers. Three forms of the disease are clinically recognized. The severe neonatal form, the childhood onset form, and an adult-onset form. We report a 50 year old male patient with centronuclear myopathy (CNM) in whom the disease manifested itself in the fifth decade of life without any family history of such illness.

Introduction

CNM is clinically characterized by diffuse involvement of skeletal muscles, with onset mainly in early childhood and a slowly progressive course. The basic histological abnormality in muscle biopsy is centrally located nuclei of muscle fibers. We present a case of CNM in whom the age of onset of manifestation was in the fifth decade a rarity.

Case Report

A 50 year old male presented with proximal weakness of both upper and lower extremities since 41 years of age. His birth and developmental milestones were normal. There was no significant family history. Pedigree chart of his family is shown (Figure 1). On physical examination, he had proximal weakness of both upper and lower limbs. All deep tendon reflexes were absent, except the ankle jerk. There was no muscle wasting, pseudohypertrophy of muscles or fasciculation noted. No dysmorphic facies were noted. The serum creatine kinase level was 27 IU/L. The thyroid function tests and nerve conduction studies were normal. A needle electromyography study showed presence of brief, small and polyphasic motor unit action potentials suggestive of myopathic pattern. Muscle biopsy of the left vastus lateralis showed transversely cut skeletal muscle tissue with effaced architecture, infiltration with adipose tissue infiltration (*) and moderate numbers of fibers with nucleus in the geographic center of myofibers (↑) (H and E stain) (Figure 2). 30% of the fibers showed central nuclei. There was no evidence of necrosis, myophagocytosis or regeneration. All the above features were suggestive of centronuclear myopathy.

Discussion

CNM is a rare congenital myopathy, which was first described as myotubular...
myopathy by Spiro et al\textsuperscript{1} in 1966. It is characterized by centrally placed nuclei in the muscle fibers. Three forms of the disease were eventually recognised.\textsuperscript{2} First, there is a severe, neonatal form that includes severe hypotonia, muscle weakness and causes respiratory failure at birth. Second, a childhood onset form, which is characterized by a slowly progressive diffuse muscle weakness. Third, an adult-onset form fully manifests in the third decade of life.\textsuperscript{3} The last form rarely occurs in the sixth decade as was seen in our case. Ophthalmoplegia and bulbar signs are usually absent in adult-onset CNM. Inheritance of the latter two forms are not well established. Though most cases of adult onset cases are sporadic,\textsuperscript{4} an autosomal dominant inheritance may occur. Both the childhood and adult-onset forms are currently referred to as centronuclear myopathy. The pathogenesis of CNM is unclear. Some autosomal dominant cases are linked to DNM2 mutation that encodes dynamin-2 protein\textsuperscript{5}. Genetic studies to identify the mutation could not be done in our case. CNM is suspected if the percentage of central nuclei in the muscle biopsysamples is abnormally high (normal range <3%). Herein, we report a case of adult-onset CNM that fully manifested during the fifth decade of life and for which the muscle biopsy revealed 30% fibers with central nuclei which is consistent with the diagnosis of CNM.

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References