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A CROSS SECTIONAL STUDY OF MYOPATHY IN HIV PATIENTS ON ZIDOVUDINE BASED ART.

Neurology

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ABSTRACT

Indian studies on zidovudine-induced myopathy are scarce. We documented the clinical muscular weakness, serum creatine phosphokinase (CK) levels and muscle histology in 47 patients with Human Immunodeficiency Virus infection men on prolonged zidovudine-based antiretroviral therapy (ART). Four patients had elevated CPK, none of them symptoms or objective muscle weakness. All muscle biopsies were normal on light microscopy. Zidovudine may be a well-tolerated drug as regards to myopathy in InVdian patients.

KEYWORDS

INTRODUCTION

Zidovudine, is an ART drug associated with symptomatic myopathy. All nucleoside analogue drugs induce mitochondrial dysfunction due to their affinity for mitochondrial gamma DNA polymerase. This affinity results in interference with mitochondrial replication, resulting in mitochondrial DNA depletion and dysfunction. [1]

Caucasian studies show that zidovudine-induced myopathy is characterized by reversible muscle weakness, wasting, myalgia, fatigue and elevated CK levels. Zidovudine can cause excessive fatigue, myalgia, or transient mild CK elevations.[2]

We studied 47 HIV infected men on prolonged zidovudine based ART for myopathy.

MATERIALS AND METHODS

We included all patients on zidovudine (600 mg/day in two divided doses) based ART, for a period of more than 1 year who came to the department of neurology, Government General Hospital, Vijayawada from January 2018 to February 2019. All the patients were evaluated for symptoms of muscular pain and weakness. The muscle strength was assessed using the Medical Research Council (MRC) scale for muscle strength. Twenty patients with either the clinical symptoms or raised CK levels or both were subjected to muscle biopsy from the quadriceps. The muscle biopsies were subjected to light microscopy.

RESULTS

Ten patients had muscle fatigue. All subjects had normal muscle strength. Four subjects on zidovudine had raised CK levels. The range of CK in these patients was 178-527 IU/L, with a mean of 227 IU/L. Five patients had only symptoms of muscle fatigue but normal CK levels, 1 patient had asymptomatic raised CK levels but no symptoms and 2 patients had both.

Thus, a total of 15 patients out of 47 patients studied had either raised CK levels or symptoms of muscle fatigue or both. Muscle biopsy was carried out in 20 patients. Muscle biopsies were normal under light microscopy in all cases.

DISCUSSION

Zidovudine myopathy is caused by molecular, histological, and biochemical dysfunction of mitochondria which seems varies between individuals. [2] The myopathy described is with ragged-red fibers and mitochondrial DNA depletion in muscle. [3] Many western studies have recorded such a myopathy. [1] In a study by Peters et al., clinical and biochemical evidence of proximal myopathy was seen in 7 of 88 patients (7.9%) who had been receiving zidovudine. only four out of these seven patients had histological evidence of myopathy on light microscopy. [4] Various studies have a higher incidence of myopathy ranging from 8 to 50% based on clinical, biochemical or histopathological criteria. [2],[4]

In our study none of the patients presented with symptoms of muscle fatigue or reduced endurance. A muscle biopsy by light microscopy in zidovudine myopathy typically shows ragged-red fibers, fiber-size variation with atrophic, necrotic and degenerating fibers of varying severity culminating in necrosis, lipid droplets and lymphoplasmocytic inflammatory response or absence of inflammation. In our study, all muscle biopsies were normal by light microscopy.

Thus, we saw a relative paucity of symptoms of muscle fatigue, loss of endurance or objective evidence of muscle weakness in our patients. The muscle biopsies were also normal as observed by light microscopy.

An important issue that requires evaluation is genetic differences in the Indian population vis-ũ-vis Caucasians, African and American population.

In conclusion, in Indian population a very small subset of zidovudine treated patients may experience symptoms of fatigue, myalgia, reduced endurance and exercise intolerance. Further studies in Indian population are recommended.

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