MYOPATHY IN HIV+ PATIENT AS A POSSIBLE SIDE EFFECT OF ANTIRETROVIRAL THERAPY

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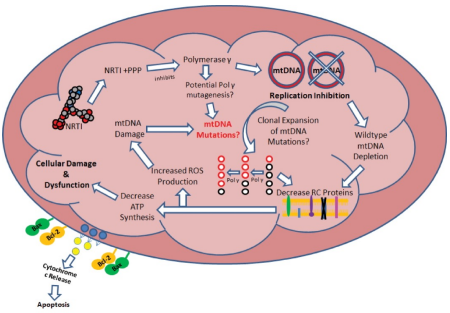
INTRODUCTION

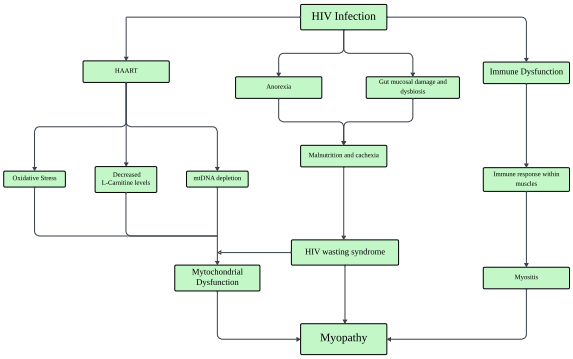
HAART (Highly Active Antiretroviral therapy) has deeply changed the almost fatal disease caused by the human immunodeficiency virus (HIV), allowing patients to live longer without the HIV-related complications. Muscle dysfunction can develop at any stage of the infection and may be an early manifestation of the disease, Thus it is not clear if the muscle damage is directly or indirectly related to HIV infection. One hypothesized factor is Nucleoside Reverse Transcriptase Inhibitors (NRTIs), that could cause mitochondrial myotoxicity as a side effect, although clinical myopathy may actually be the result of a conglomeration of nutritional and environmental factors in HIV-infected susceptible patients.

Mitochondrial myotoxicity results from the inhibition of the mitochondrial DNA polymerase that leads to the depletion of mtDNA and consequently to the production of dysfunctional mitochondrial proteins. Moreover NRTIs, especially Zidovudine, induces myocyte oxidative stress and reduces cellular carnitine levers independently of mtDNA damage.

This process, in muscles, leads to myopathic symptoms such as proximal muscle weakness and myalgias

We report a case of myopathy in a HAART-treated HIV-patient.





CASE PRESENTATION

A 62 y.o. man came to our attention for fatigue and proximal weakness. Past medical history included HIV infection on HAART, testicular seminoma treated surgically at 20 y.o., with later hepatic lesions treated with chemotherapy based on cisplatin. Firstly it has been performed an EMG/ENG which showed a sensitive-motor axonal neuropathy (probably related to the cisplatin therapy) associated with myopathic signs. Blood tests showed high CK serum levels (about 800-1000 IU/L). Muscle MRI showed fat replacement of the anterior/posterior compartment of the thigh, gastrocnemius edema. Our neurological examination showed slight calves hypertrophy, mild-to-moderate iliopsoas weakness, hypoevoked reflexes, with preserved gait. We performed muscle biopsy, which reported occasional centralisation of myonuclei, one degenerate fibre, two fibres with rimmed vacuoles, fibre splitting and modest increase in perimysial connective tissue, normal acid phosphatase activity. Electron microscopy confirmed myopathic features, characterized by “swollen” mithochondria, according with the hypothesis of antiretroviral induced myotoxicity.

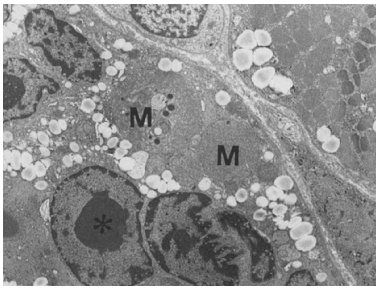


Fig. 1 Muscle electron microscopy shiwing «swollen» mitochondria

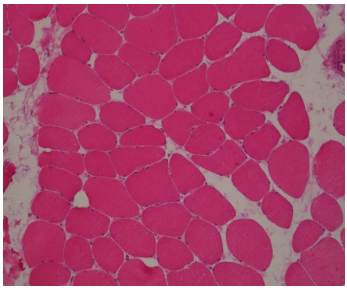


Fig. 2. Increase of perimysial connective tissue. Muscle biopsy section, Haematoxylin and eosin, 10x magnification.

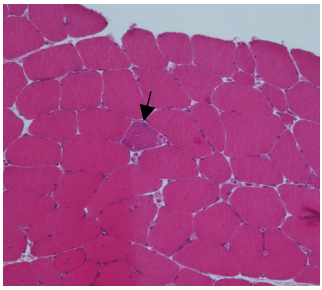


Fig. 3. Degenerate muscle fiber (indicated by arrow). Muscle biopsy, Haematoxylin and eosin, 10x magnification.

CONCLUSION

This case highlights how myopathy can be a finding in HIV-infected patients treated with HAART. Myopathy can be a side effect of HAART due to mitochondrial damage, which lead to muscle damage and subsequently muscular weakness and myalgias. Thus, in HIV infection there is also an immune dysfunction that could trigger an immune response leading to inflammation within the muscular tissue. Even the wasting syndrome that the HIV infection can cause could lead to myopathy due to muscles hypotrophy and muscle mass loss. This means that further studies are needed for a better understanding of muscular involvement in HIV-positive patients.

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