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IMPACT OF ATORVASTATIN ON DERMATOMYOSITIS SKELETAL MUSCLE GENE EXPRESSION

Isabela Bruna Pires Borges¹, Sueli Mieko Oba-Shinjo¹, Antonio Marcondes Lerario², Suely Kazue Nagahashi Marie¹, Samuel Katsuyuki Shinjo^{1*}

1. Universidade de São Paulo, São Paulo (SP), Brazil. 2. University of Michigan, Ann Arbor (MI), USA.

*Corresponding author: isapires@usp.br

BACKGROUND

Few recent studies have shown that statins are safe in clinics and laboratories for patients with stable dermatomyositis and dyslipidemia. However, no studies have assessed the impact of these drugs on the gene expression of dermatomyositis in muscle tissues, which motivated us to carry out the present study to evaluate the impact of atorvastatin on the gene expression of muscle tissues in patients with stable dermatomyositis and dyslipidemia.

MATERIALS AND METHODS

This is a subanalysis of a prospective, randomized, double-blind, placebo-controlled study conducted at our tertiary center. Muscle tissue samples from eight adult patients with defined dermatomyositis (EULAR/ACR 2017 classification criteria), disease stable (according to IMACS set scores) and dyslipidemia were analyzed. Six of eight patients received atorvastatin (20 mg/day), and two patients received placebo (control group) for 12 consecutive weeks. Transcriptome analysis (RNA-seq) was performed on samples of *vastus lateralis* muscles obtained at the beginning and after 12 weeks of drug intervention. The results were analyzed to compare the expression change (hyper- or hypoexpressed) after treatment (atorvastatin or placebo) compared with preintervention control between 1.0 and -1.0 (on the log2 scale) and $p < 0.05$.

RESULTS

The demographic, clinical, laboratory parameters, and comorbidity frequencies were comparable between atorvastatin and placebo groups. As expected, the lipid profiles improved significantly in the atorvastatin group, and no adverse events were observed in either group. There were no changes in genes related to the mitochondrial, oxidative and metabolic pathways. There was a significant change (increase or decrease) in only 27 genes from patients who took atorvastatin. Among these genes, there was a significant decrease in the gene expression involved in the lipid pathway (*ADIPOQ* and *PLIN1*) as well as the gene expression involved in the inflammatory response (*CXCR2* and *S100A12*).

CONCLUSIONS

Atorvastatin did not promote significant changes in the expression of genes related to mitochondrial, oxidative, or metabolic pathways. However, there was a significant, isolated reduction in the expression of the genes involved in lipid metabolism and the gene expression involved in the inflammatory response. The data reinforce that the atorvastatin is a safe method to control dyslipidemia in patients with stable dermatomyositis.

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