Alteration of performance in a mouse model of Emery-Dreifuss muscular dystrophy caused by A-type lamins gene mutation.  


Abstract
Autosomal Emery-Dreifuss muscular dystrophy (EDMD) is caused by mutations in the lamin A/C gene (LMNA) encoding A-type nuclear lamins, intermediate filament proteins of the nuclear envelope. Classically, the disease manifests as scapulo-humero-peroneal muscle wasting and weakness, early joint contractures and dilated cardiomyopathy with conduction blocks; however, variable skeletal muscle involvement can be present. Previously, we and other demonstrated altered activity of signaling pathways in hearts and striated muscles of LmnaH222P/H222P mice, a model of autosomal EDMD. We showed that blocking their activation improved cardiac function. However, the evaluation of the benefit of these treatments on the whole organism is suffering from a better knowledge of the performance in mouse models. We show in the present study that LmnaH222P/H222P mice display a significant loss of lean mass, consistent with the dystrophic process. This is associated with altered VO2 peak and respiratory exchange ratio. These results showed for the first time that LmnaH222P/H222P mice have decreased performance and provided a new useful means for future therapeutic interventions on this model of EDMD.

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