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***Glutathione and glutamate levels in the diaphragm of patients with chronic obstructive pulmonary disease.***

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Recently, decreased glutamate (Glu) and reduced glutathione (GSH) levels were reported in the quadriceps femoris of patients with chronic obstructive pulmonary disease (COPD). The aim of the present study was to investigate whether Glu and GSH levels are also modified in the diaphragm of these patients. Nine male COPD patients (forced expiratory volume in one second (FEV1) range 28- 68% of the predicted value) and seven male patients with normal pulmonary function (mean SD FEV1 86 3% pred) submitted to thoracotomy were included. Biopsy specimens were taken from the diaphragm (both groups) and the quadriceps femoris (COPD group alone) in order to assess fibre size, myosin heavy chain expression, GSH levels and amino acid profile. The COPD group was characterised by preserved fibre size, a higher proportion of type I fibres (mean SEM 70 3 versus 26 4%), and higher Glu and GSH content in the diaphragm compared to the quadriceps muscle. However, Glu and GSH levels were similar in diaphragm from the COPD and control groups. Glu level correlated with GSH level in both muscles. No significant correlation was found between Glu or GSH level and fibre size or proportions. This study shows that glutamate and reduced glutathione levels are preserved in the diaphragm of chronic obstructive pulmonary disease patients. Alterations in glutamate and reduced glutathione metabolism are muscle-specific in chronic obstructive pulmonary disease, affecting the quadriceps femoris but not the diaphragm. Glutamate and reduced glutathione levels are strongly interrelated in both muscles, independent of fibre type distribution and fibre size.

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