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Title: The estimation of respiratory muscles (RM) status by echodensitometry in men with chronic obstructive pulmonary disease (COPD)

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Body: Aim: Investigate the RM status. Material, Methods: We obtained the indices: homogenity (H), structural density (SD), echogenicity (E) and dispersion (D) of the internal oblique abdominal muscle (intOAM) by ultrasonic scanner. We carried out histological research of intOAM. Research was made in 20 COPD pts: 1st group (10 – 1st stage); 2nd group (10 – 2nd stage). Control - 12 healthy subjects. Results: There have been areas of myolysis, cell proliferation of perimiysium, "ingrowth" of fatty tissue between myofibrils (MF). There is interstitial sclerosis, sections “contractions” of MF. Among the relatively preserved MF was found deep dystrophic one with protein granules of different sizes in the appearance of the sarcoplasm. The H in pts of the 1st and 2nd groups was 20.8 and 19.3 respectively ($p< 0.05$). The E also was different in pts of the 1st and 2nd groups (3.7 and 4.8). The D was increased in the 2nd group 18.6 vs. the 1st group 17.5. The SD had the tendency to decrease. Increasing of COPD severity was associated with significant enhancing of “contractions” ($r=0.72$), destruction of MF ($r=0.69$) and proliferation of fibroblasts ($r=0.52$). We detected the presence of negative correlations between H, SD and sclerosis ($r=-0.39$ and $r=-0.51$ respectively). Meanwhile the E was higher in these pts and correlated directly ($r=0.48$; $p<0.05$). The D was increased in the presence of fragmentation of MF ($r=0.52$). The E correlated in the 2nd group with fat mass ($r=0.62$). This may indicate the accumulation of intramuscular fat in the second stage. Conclusion: The proposed echodensitometric parameters reflect the degenerative processes occurring in the RM.