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INFLUENCE OF INTERNAL AND EXTERNAL FACTORS ON LUNG FUNCTION IN PATIENTS WITH ASTHMA, COPD, AND HEALTHY VOLUNTEERS

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Background: Several studies conducted in a past few years, have shown connection between internal, external factors and lung function, however their outcomes sometimes were conflicting. The aim of this study was to investigate relationships between age, height, especially birth weight, smoking and lung function. **Methods:** We included 479 subjects who were divided into 5 groups: 123 healthy non-smokers (HNS), 180 healthy smokers (HS), 72 non-smoking asthmatics (AN), 57 smoking asthmatics (AS) and 47 COPD patients. In every patient we performed lung function test, and we took information about age, height, birth weight (BW) and smoking. Relationships between four categories of BW and lung function, spirometric parameters as follow: FVC%, FEV1%, PEF%, MEF25-75%, MVV% and FEV1/FVC% were taken into consideration. Statistical dependence between BW and smoking, as well as lung function tests in healthy individuals and asthma patients was evaluated by multifactor variance analysis (MVA) with three variables. In COPD patients MVA with two variables and LSD test was done. **Results:** Statistical analysis of BW influence, number of cigarettes and asthma influence on FVC% revealed that only asthma is the factor significantly differentiating this parameter ($p<0,01$). On FEV1 significant influence had asthma ($p<0,001$) and BW ($p<0,016$), on PEF% - asthma ($p<0,001$) and BW ($p<0,001$), on MEF25-50% - asthma ($p<0,001$) and BW (<0,001), 0n FEV1/FVC% - exclusively asthma ($p<0,001$) and on MVV% - asthma ($p<0,001$) and BW ($p<0,01$). FEC%, FEV1%, PEF%, MEF25-50% increased proportionally respectively to particular BW categories in HNS group, however optimal BW category predicting increase FVC%, FEV1%, PEF% and MEF25-50% was 2751-3250 g. In asthma BW category predictinf increase of FVC%, FEV1%, PEF% and MEF25-50% was 3251-3750g, but BW category predicting decrease of FEV1/FVC% was 2751-3250g. Comparison results in COPD group with results obtained in other four groups generated by asthma and cigarette smoking shown that values of FVC%, FEV1%, PEF% MEF25-50% and MVV% in patients with COPD did not change proportionally to all BW categories. However as for FEV1/FVC% proportional increase of this parameter in BW category of 2751-3250 g was observed. **Conclusions:** BW in different pattern dependent on BW category influences on spirometric parameters as independent factor both in healthy individuals and patients suffering from asthma and COPD.