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Title: Balance disturbances in asthmatic patients. An unrecognized link between lung, brain and labyrinth

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Body: BACKGROUND: Correlations between asthma and anxiety and between anxiety and balance disorders have been repeatedly described. These observations suggest that equilibrium abnormalities may also be present in asthmatic patients. This issue is clinically relevant because untreated postural deficits can potentially worsen the prognosis of asthma by triggering anxiety and, consequently, respiratory symptoms. This study aimed to evaluate the efficiency of postural control in asthma patients and its potential correlation with anxiety symptoms. METHODS: We compared 30 subjects with persistent, controlled asthma to 30 age- and sex-matched controls. Anxiety symptoms were evaluated using the Spielberger State-Trait Anxiety Inventory (STAI). Balance control was evaluated by dynamic posturography using measurements of the center of pressure (CoP) displacement in the latero-lateral and antero-posterior directions. RESULTS: The asthma group had significantly higher scores for the STAI-State (46.8 ± 11.38 versus 38.2 ± 13.16 ; $t = 2.89$; $p=0,005$) and the STAI-Trait (50.1 ± 13.60 versus 37.9 ± 12.67 ; $t = 4.22$; $p<0,001$). An analysis of covariance (using anxiety as the covariate) showed increased values for the area delimited by the CoP in asthmatic patients. CONCLUSION: Balance abnormalities seem to occur frequently in asthma patients independently of the presence of anxiety symptoms. However, the presence of vestibular dysfunction caused by anxiety provocation may have a major impact on the prognosis of these patients. These findings suggest that disequilibrium-related complaints must be investigated in asthmatic patients, particularly in those presenting with higher levels of anxiety.