Homeotic genes expression profile of peripheral blood leukocytes in transient ischemic attacks and cerebral ischemic strokes

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The aim of the study was to identify homeotic genes expression profile of peripheral blood leukocytes in patients diagnosed with transient ischemic attacks (TIA) and cerebral ischemic strokes in order to select "gene candidates" useful in predicting the risk of subsequent ischemic incidents in this group of patients. The study group included 51 subjects diagnosed with TIA (n=24) or ischemic stroke (n=27). RNA was extracted from peripheral blood leukocytes and the panel of 168 genes belonging to homeotic genes family was evaluated using SABiosciences PCR Arrays (PAHS-083Z and PAHS-0501Z). The obtained results were then elaborated using bioinformatic tools involving heat maps, gene set enrichment and association studies as well as clinical analyses. Potential genes indicating the risk of recurrent ischemic episode in patients diagnosed with transient ischemic attack were DMBX1, PROX1, GATA1, GATA6 and HAND1. In case of DMBX1 and PROX1, the risk of subsequent ischemic attack correlated with increased expression of these genes. On the other hand, decreased expressions of GATA1, GATA6 and HAND1 indicated the probability of another episode of cerebral ischemia. According to clinical evaluation, the most promising genes, strongly correlating with established factors of the cerebral ischemia, were GATA1 and GATA6 (p0,0001; r=0,8). They indicate, however, the risk of a recurrent cerebral ischemic episode exclusively in patients diagnosed with TIA. No genes have been shown as the potential factors indicating the risk of re-ischemia in patients initially diagnosed with cerebral ischemic stroke.