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ASPIRIN RESISTANCE IN PATIENTS WITH CEREBRAL ATHEROSCLEROSIS: POSSIBLE ROLE OF MICRORNAS

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Abstract

Introduction. *Cerebral atherosclerosis remains a major cause of ischemic cerebrovascular disease, and variability in response to antiplatelet therapy may contribute to persistent vascular risk. MicroRNAs have emerged as potential epigenetic regulators of platelet function and may help explain laboratory aspirin non-response. This study investigated the association between selected microRNAs and platelet reactivity in patients with cerebral atherosclerosis receiving acetylsalicylic acid.*

Methods. *This prospective single-center cross-sectional study included 54 patients with cerebral atherosclerosis treated with low-dose acetylsalicylic acid for primary or secondary stroke prevention. Platelet aggregation was measured in vitro by light transmission aggregometry using adrenaline and adenosine diphosphate. Patients were classified as responders or non-responders according to adrenaline-induced platelet aggregation, with values above 25% indicating non-response. Leukocyte expression of eight microRNAs was quantified. Correlation, linear regression, logistic regression, and receiver operating characteristic analyses were performed with adjustment for relevant clinical variables.*

Results. *Laboratory non-response to acetylsalicylic acid was observed in 64.8% of patients. Of the eight microRNAs analyzed, only microRNA-126-3p and microRNA-126-5p showed significant inverse associations with adrenaline-induced platelet aggregation after correction for multiple comparisons. In adjusted analyses, microRNA-126-3p remained independently associated with lower platelet aggregation (β = -0.3129; p = 0.0483) and with a lower probability of non-response (OR = 0.850; 95% CI 0.684–0.968; p = 0.0466). Its predictive value was moderate alone and improved when combined with clinical characteristics.*

Discussion. *MicroRNA-126-3p appears to be a promising epigenetic marker of variability in aspirin response in patients with cerebral atherosclerosis. These findings support further prospective validation of microRNA-126-3p as a tool for identifying patients at risk of inadequate platelet inhibition on aspirin.*

Keywords: cerebral atherosclerosis, aspirin resistance, platelet aggregation, epigenetics, microRNA

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