LncRNAs, NEAT1, HOTAIR, and GAS5 expression in hypertensive and non hypertensive associated cerebrovascular stroke patients, and its link to clinical characteristics and severity score of the Disease

المشاركون فى البحث :

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Background: Cerebrovascular stroke (CVS) is a potentially fatal disease. The most common risk factor for CVS is hypertension. Long noncoding RNA (lncRNAs) NEAT1, GAS5, and HOTAIR have previously been linked to a higher risk and development of cerebrovascular stroke.

Aim: Our study aim was to investigate whether the expression of these genes differed between CVS with and without hypertension, as well as to compare each group to controls.

Method: In total, 181 CVS patients were enrolled, including 91 chronic hypertensive patients with stroke, 90 stroke patients without hypertension, and 51 control subjects. Real-time qRT-PCR was used to detect the expression of target lncRNAs in serum.

Results: When compared to controls, there was a statistically higher level of lncNEAT1 in each case group (median (IQR)= 3.68 (1.35-7.35) and 3.05 (0.95-6.45) for the hypertensive and non-hypertensive groups, respectively, with a significantly higher level in the hypertensive group (P=0.04). When compared to controls, lncHOTAIR was significantly downregulated in all case groups (medians in hypertensive and non-hypertensive patients were 0.13, and 0.34, respectively), with a significantly lower level in the hypertensive group (P=0.05). LncGAS5 levels in patients were significantly lower (median (IQR) = 0.16 (0.02-0.55) and 0.25 (0.03-0.99) for the hypertensive and no hypertensive groups, respectively) compared to controls, with a significantly lower level in the hypertensive group (P=0.02). There was a significant positive correlation between NEAT1 and GAS5, but a significant negative correlation between each with HOTAIR in both patients' groups. We also

detected a significant negative correlation between each NEAT1 or GAS5 and NIHSS score while a significant positive correlation between HOTAIR and NIHSS. ROC curve analysis for GAS5 was able to differentiate patients with CVS hypertensive from patients with CVS non-hypertensive.

Conclusion: LncRNAs NEAT1, HOTAIR, and GAS5 could be used as diagnostic and prognostic biomarkers of CVS that correlate with NIHSS score. There was a difference in the expression of NEAT1, HOTAIR, and GAS5 in patients with hypertensive and no hypertensive CVS, and this finding could produce a novel target for CVS therapy.

Keywords*:* LncRNA ,NEAT1, HOTAIR, GAS5, Cerebrovascular stroke