Expressions of serum miR-146a and COX-2 in children with drug-resistant epilepsy and their correlation with prognosis

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Epilepsy is one of the most common chronic diseases of nervous system, and long-termanti-epileptic drug therapy leads to drug-resistant epilepsy in few cases. MicroRNA-146a is reported to influence development of drug-resistant epilepsy by regulating inflammatory response. Similarly, cyclooxygenase-2 (COX-2) is also known to play an important role in the early inflammatory response and neural excitation of brain tissue under ischemic and hypoxic conditions and alleviate epilepsy. Here, we investigated the expression of serum miR-146a and COX-2 in children with drug-resistant epilepsy and their correlation with prognosis. A total of 173 children with epilepsy were selected and divided into non-drug resistant group (110 patients) and drug-resistant group (63 patients) according to the diagnostic standard of International League Against Epilepsy (ILAE). All children with drug-resistant epilepsy received hemispheric insular transection, the prognosis was evaluated according to Engel classification, and the children were divided into non-recurrence group (51 patients) and recurrence group (12 patients) according to the 1-year follow-up results. qRT-PCR and ELISA was used to detect the expression level of miR-146a in serum and COX-2, respectively, and compared between the two groups. Receiver operating characteristic (ROC) curve was drawn to evaluate the predictive value of serum miR-146a and COX-2 expression levels in drug-resistant epilepsy, and logistic regression analysis was used to analyze the influencing factors of relapse in children with drug-resistant epilepsy. There were no significant differences in gender, age, family history of epilepsy, course of disease and seizure frequency between non-drug resistant group and drug-resistant group (P >0.05); compared with those in the non-drug resistant group, the expression levels of miR-146a and COX-2 in the drug resistant group were higher (P <0.05). The area under the curve (AUC) of serum miR-146a and COX-2 alone or combination in predicting drug-resistant epilepsy was 0.752, 0.757 and 0.836, respectively. The cut-off value of miR-146a in predicting drug-resistant epilepsy was 1.09, and the sensitivity and specificity

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were 74.60 and 65.50%, respectively. The cut-off value of COX-2 was 2.05 ng/L, the sensitivity and specificity were 65.10 and 80.90%, respectively. The sensitivity and specificity of the two methods were 68.30 and 86.40%, respectively, and the specificity was higher than that of single prediction. Compared with those in the non-recurrence group, the levels of serum miR-146a and COX-2 in the recurrence group were higher (P <0.05). Logistic regression analysis showed that high level of miR-146a and high level of COX-2 were risk factors for recurrence of drug-resistant epilepsy (P <0.05). Over all, our results suggest that the expression of serum miR-146a and COX-2 are related to the occurrence and prognosis of drug-resistant epilepsy, which may be used for early prediction and risk assessment of prognostic recurrence.

Keywords: Cyclooxygenase-2, MicroRNA-146a