

ABSTRACT

Background: *Alpha-thalassemia/mental retardation syndrome X-linked (ATRX)* mutations commonly examined in gliomas and plays a key role in gene expression regulation because of its involvement as a regulator of chromatin remodeling and transcription. Mutation of *alpha thalassemia/mental retardation syndrome X-linked (ATRX)* gene and loss expression of *ATRX* protein detected by immunohistochemistry have been observed in WHO grade II, III, IV gliomas. Immunohistochemistry (IHC) method such is required as alternative examination in detecting *ATRX* mutation. This study aims to predict correlation of immunohistochemistry (IHC) in detecting *ATRX* mutation in WHO grade II, III and IV glioma.

Methods: This research was a cross-sectional study using Formalin-Fixed Paraffin Embedded (FFPE) of glioma patients WHO grade II, III and IV, dated back from 2017 until March 2022. Diagnosis of glioma was established based on histopathological findings. IDH mutant status was determined based on PCR. *ATRX* mutation was determined by immunohistochemistry. Association between *ATRX* immunohistochemistry and WHO grade in glioma was analyzed using *chi-square* test.

Results: Thirty nine (39) samples glioma with *IDH mutant* were examined. The incidence was predominantly in male (66,67%) between 20 to 66 years old. Among them, 19 (48,72%) patients show immunopositive reaction for *ATRX* immunohistochemistry. Statistical analysis showed that *ATRX* mutation was not associated with histopathological grading ($p > 0.05$).

Conclusion: *ATRX* mutation was not associated with histopathological grading in Indonesian glioma patients. Further examinations involving the correlation between *ATRX* mutations and prognosis can be carried out considering that various references still mention diverse data.

Keywords: glioma, *Alpha-thalassemia/mental retardation syndrome X-linked*, *ATRX*, IHC