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Nucleophosmin overexpression is associated with poor survival in astrocytoma.

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Abstract

The multiple functions of the protein **nucleophosmin** (NPM) include the regulation and balance of cell growth, proliferation, and apoptosis. Many cancers have suspected associations with **overexpression** of NPM or with mutation of the NPM gene. Although NPM and anaplastic lymphoma kinase fusion proteins are known to be related to the Janus Kinase/Signal Transduction and Activator of Transcription (JAK/STAT) signaling pathway, the relationships of NPM, JAK2, and STAT5 to **astrocytoma** remain unclear. Therefore, this study performed histochemical analyses of expressions of NPM, p-JAK2, and STAT5B proteins in patients with **astrocytoma**. The results showed that high NPM expression was significantly **associated** with high tumor grade ($p = 0.000$), old age ($p = 0.000$), low Karnofsky Performance Scale (KPS) score ($p = 0.000$), and tumor recurrence ($p = 0.045$). High p-JAK2 expression was significantly **associated** with old age ($p = 0.000$), high tumor grade ($p = 0.000$), low KPS score ($p = 0.000$), and tumor recurrence ($p = 0.036$). Expression of STAT5B was significantly correlated with tumor grade ($p = 0.018$) and KPS score ($p = 0.002$). High expressions of NPM, p-JAK2, and STAT5B were **associated** with a short **survival** time ($p = 0.035$, 0.003 and 0.002 , respectively). In multivariable analysis, STAT5B expression was a significant predictor of **survival** time ($p = 0.003$). In conclusion, NPM and p-JAK2/STAT5B may have important roles in tumor progression, and STAT5B is an independent prognostic marker of **astrocytoma**.

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KEYWORDS: JAK/STAT pathway; **Nucleophosmin**; **astrocytoma**; immunohistochemistry

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