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Levels of N-cadherin expression in human meningioma

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Meningiomas represent one of the most common primary brain tumors. They originate from arachnoid cap cells of the arachnoid villi (Pacchioni's granulations) which are protrusions of second brain meninx called arachnoid mater. Although around 80 percent of meningioma show benign character and are classified as grade I, they can slowly grow and constrict the brain which can cause disability and even be life threatening. Remaining 20 percent show greater likelihood of recurrence and aggressive behavior and are classified as atypical (grade II) or anaplastic (grade III) which are considered malignant, therefore invasive. N-cadherin is Ca²⁺-dependent glycoprotein that mediates cell-cell adhesion in adherens junctions. It has an important role in embryogenesis, leading cells to undergo an epithelial-mesenchymal transition. The similar mechanisms, in which N-cadherin is overexpressed, help cancer cells to lose cell adhesion and polarity, become motile and consequently invade surrounding tissue or develop metastasis.

The aim of our study was to assess and analyze different N-cadherin expressions in 30 samples of paraffin-embedded meningioma sections. To assess and localize N-cadherin expression, we used DAB-labeled immunohistochemical reaction using streptavidin horseradish peroxidase/DAB (EnVision™, Dako REAL™) and specific monoclonal antibody N-cadherin (D-4): sc-8424, Santa Cruz Biotechnology, Inc. Our results have shown that all investigated meningiomas express N-cadherin protein. We counted 200 cells of each meningioma sample and found N-cadherin to be expressed in every meningioma tumor. However, individual cells within meningioma sections display various levels of N-cadherin expression. N-cadherin is mostly expressed in cytoplasm, but was also found in nucleus and membranes.

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