

## Intraoperative ultrasonography in brain tumor surgery: 5-year experience

\*<sup>1,2</sup>Vasile Galearschi, <sup>1,2</sup>Eugeniu Mindrigan, <sup>1,2</sup>Alexandru Andrusca, <sup>1,2</sup>Victor Andronachi

<sup>1</sup>Department of Neurosurgery, *Nicolae Testemitanu* State University of Medicine and Pharmacy

<sup>2</sup>*Diomid Gherman* Institute of Neurology and Neurosurgery, Chisinau, the Republic of Moldova

\*Corresponding author – Vasile Galearschi. E-mail: vasile.galearschi@usmf.md

### Abstract

**Background:** Ultrasonography is an accessible imaging modality that provides real-time guidance with minimal risk or additional time. There is a strong correlation between ultrasonography and postoperative computed tomography when evaluating the extent of tumor resection, suggesting ultrasonography can have significant clinical implications. The objective of this study was to provide more evidence on the usage of ultrasonography in the determination of gross-total resection of brain tumors.

**Material and methods:** This study consisted of a retrospective review of patients treated at the Institute of Neurology and Neurosurgery between 2015 and 2020 for a brain tumor. All patients were treated with ultrasonography and then underwent postoperative tomography with or without contrast within first 3 days after surgery.

**Results:** A total of 85 cases were included. Ultrasonography results showed a strong association with postoperative tomography. Ultrasonography was able to accurately identify residual tumor in 100% of subtotal resection cases where resection was stopped due to invasion of tumor into eloquent locations. Cases involving gliomas had a 75% intended total resection rate. Cases involving metastatic tumors had an 87% intended total resection rate. The sensitivity and specificity were reported for ultrasonography in all included tumor pathologies, glioma cases, and metastatic tumor cases, respectively.

**Conclusions:** The use of ultrasonography may allow for a reliable imaging modality to achieve a more successful total resection of brain tumors. When attempting total resection, it was demonstrated an 81% total resection rate. Ultrasonography can be used in brain tumor surgery to improve surgical outcomes.

**Key words:** neurosurgery, intraoperative ultrasonography, tumor resection.

## Immunoenzymatic changes in ischemic stroke in children

\*<sup>1,2</sup>Mariana Sprincean, <sup>1,2</sup>Svetlana Hadjiu, <sup>1,2</sup>Nadejda Lupusor, <sup>1</sup>Corina Griu, <sup>1</sup>Ludmila Cuznet, <sup>1</sup>Stela Racovita, <sup>1,3</sup>Ludmila Feghiu, <sup>1,2</sup>Cornelia Calcii, <sup>1,2</sup>Ninel Revenco, <sup>1,3</sup>Stanislav Groppa

<sup>1</sup>*Nicolae Testemitanu* State University of Medicine and Pharmacy, <sup>2</sup>Institute of Mother and Child

<sup>3</sup>National Center of Epileptology, Institute of Emergency Medicine, Chisinau, the Republic of Moldova

\*Corresponding author – Mariana Sprincean. E-mail: mariana.sprincean@usmf.md

### Abstract

**Background:** Ischemic stroke (IS) in children is a major neurological emergency, being a primary cause of morbidity and mortality. The incidence of IS is 2 – 13:100000 children or 1:4000 in neonatal period. The purpose of the study was evaluation of the expressivity of immune parameters in children with IS to improve understanding of pathogenesis, early diagnosis and predictive factors of the disease.

**Material and methods:** In 2017 – 2019 in the Republic of Moldova a prospective study was carried out on a sample of 53 children with IS (study sample, SS), investigated by ELISA in the acute phase of the process determining the serum levels of endogline CD105 (ENG), S100B protein, vascular endothelial growth factor (VEGF), ciliary neurotrophic factor (CNTF), antiphospholipid antibodies (APA), and interleukin 6 (IL-6). These markers were also appreciated in 53 "practically healthy" children (control sample, CS). Six months after IS, serum levels of VEGF and S100B were re-assessed.

**Results:** Medium values of markers in acute phase were as follows: (1) ENG –  $2.06 \pm 0.012$  ng/ml (F=84.812, p<0.001); (2) S-100B –  $0.524 \pm 0.0850$  ng/ml (F=9.330, p<0.01); (3) VEGF –  $613.41 \pm 39.299$  pg/ml (F=60.701, p<0.001); (4) CNTF –  $7.84 \pm 0.322$  pg/ml (F=32.550, p<0.001); (5) APA –  $-1.37 \pm 0.046$  U/ml (F=60.701, p<0.001); (6) IL-6 –  $22.02 \pm 2.143$  pg/ml (F=43.810, p<0.001), which were significantly different from the levels in CS.

**Conclusions:** During the acute period of stroke in children, an increased serum level of the protein S100B, VEGF, CNTF, APA and IL-6 is observed, while CD 105 has low levels. These changes can have predictive role to improve prognosis of neurological outcome.

**Key words:** biomarkers, stroke, children.