

## HUBUNGAN UKURAN TUMOR DENGAN KEJADIAN PERITUMORAL EDEMA PADA MRI KEPALA PENDERITA MENINGIOMA

Rahmawati Dianing P<sup>1</sup>, Arif Faisal<sup>2</sup>, Bambang Purwanto Utomo<sup>2</sup>

<sup>1</sup>Residen dan <sup>2</sup>Staf Departemen Radiologi, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan Universitas Gadjah Mada, Yogyakarta

### INTISARI

**Latar Belakang :** Meningioma intracranial dapat disertai edema peritumoral (38%- 67%) yang mengakibatkan morbiditas, perburukan gejala klinis dan kesulitan tindakan reseksi total serta meningkatkan risiko komplikasi pasca pembedahan. Mekanisme pasti terjadinya edema peritumoral pada meningioma masih belum jelas dan masih terus diteliti.

**Tujuan :** Mengetahui korelasi ukuran volume tumor meningioma dengan volume edema peritumoral pada MRI kepala pra tindakan penderita meningioma di RSUP dr Sardjito

**Bahan dan Metode :** Penelitian ini merupakan penelitian analitik observasional dengan rancangan *cross sectional* secara retrospektif dengan menggunakan data sekunder. Subyek penelitian adalah penderita meningioma intracranial yang telah menjalani pemeriksaan MRI kepala di Instalasi radiologi RSUP Dr Sardjito dalam kurun waktu 2021-2022. Subyek penelitian diambil dengan menggunakan metode *consecutive non-random sampling*.

**Hasil :** Dari 40 sampel penelitian, sebagian besar terdiri dari perempuan (87,50%), rentang usia subyek penelitian paling banyak adalah usia 41-50 (50%), lokasi tumor di supratentorial (87,50%), margin ireguler (52,50%) dan merupakan meningioma derajat 1(85%). Dari uji korelasi *Spearman* ukuran volume tumor dan volume edema peritumoral didapatkan koefisien korelasi yang kuat,  $r = 0,627$  dan nilai  $p = 0,001(p < 0,05)$ . Pada analisis multivariat didapatkan hasil bahwa ukuran volume tumor merupakan variabel prediktor yang signifikan terhadap volume edema peritumoral, dengan nilai  $p = 0,030$  dan koefisien korelasi sedang,  $r = 0,456$ . Kemampuan variabel prediktor ukuran volume tumor, jenis kelamin, lokasi, dan margin tumor dalam model regresi secara bersama memprediksi edema peritumoral adalah sebesar 13,5 %.

**Kesimpulan :** Terdapat korelasi positif yang signifikan antara ukuran volume tumor dengan volume edema peritumoral pada MRI kepala pra tindakan penderita meningioma dengan koefisien korelasi yang kuat.

**Kata Kunci :** Edema peritumoral, Volume tumor, Meningioma

## THE CORRELATION BETWEEN TUMOR SIZE AND PERITUMORAL EDEMA IN HEAD MRI OF MENINGIOMA PATIENTS

Rahmawati Dianing P<sup>1</sup>, Arif Faisal<sup>2</sup>, Bambang Purwanto Utomo<sup>2</sup>

<sup>1</sup>Resident and <sup>2</sup>Staff of Department of Radiology, Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta

### ABSTRACT

**Background :** Intracranial meningiomas may be accompanied by peritumoral edema (38%-67%) which may results in morbidity, worsening of clinical symptoms and difficulty of total resection as well as increasing the risk of postoperative complications. The exact mechanism by which peritumoral edema develops in meningiomas is unclear and is still being investigated.

**Objective :** To investigate the correlation between meningioma tumor volume size and peritumoral edema volume on pre-operative MRI of the head of meningioma patients at Dr. Sardjito General Hospital

**Materials and Methods :** This study is an observational analytic study with a retrospective cross-sectional design using secondary data. The research subjects were patients with intracranial meningioma who had undergone a head MRI examination at the Radiology Installation of Dr. Sardjito General Hospital in the period of 2021-2022. Research subjects were taken using consecutive non-random sampling method.

**Result :** Of the 40 research samples, most of them are women (87.50%), the age range of research subjects was mostly age 41-50 years old (50%), the location of the tumor was supratentorial (87.50%), irregular margins (52.50 %) and a meningioma grade 1 (85%). From the Spearman correlation test of tumor volume size and peritumoral edema volume, a strong correlation coefficient was obtained,  $r = 0.627$  and  $p \text{ value} = 0.001$  ( $p < 0.05$ ). The multivariate analysis showed that tumor volume was a significant predictor of peritumoral edema volume, with  $p = 0.030$  and moderate correlation coefficient,  $r = 0.456$ . The predictive ability of tumor volume size, gender, location, and tumor margin in the regression model to predict peritumoral edema was 13.5%.

**Conclusion :** There is a significant positive correlation between the size of the tumor volume and the volume of peritumoral edema on pre-operative MRI of the head in meningioma patients with a strong correlation coefficient

**Keyword :** Peritumoral edema, Tumor volume, Meningioma