

## NILAI PREDIKSI UKURAN TUMOR TERHADAP KEJADIAN EDEMA PERITUMORAL PADA MRI KEPALA PRA TINDAKAN PENDERITA MENINGIOMA

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### INTISARI

**Latar Belakang :** Edema peritumoral meningioma menyebabkan morbiditas, luaran klinis yang buruk dan mempersulit pembedahan. Ukuran tumor berkorelasi dengan kejadian edema peritumoral. Namun, belum diketahui nilai ambang batas ukuran tumor yang dapat menimbulkan edema peritumoral pada penderita meningioma

**Tujuan :** Mengetahui nilai ambang batas ukuran meningioma yang dapat memprediksi kejadian edema peritumoral baik secara umum maupun berdasarkan lokasi spesifik di intracranial pada MRI kepala pra tindakan penderita meningioma.

**Metode :** Jenis penelitian ini menggunakan rancangan *cross sectional* secara retrospektif pada penderita meningioma intracranial yang telah menjalani pemeriksaan MRI kepala di Instalasi radiologi RSUP Dr Sardjito dalam kurun waktu 2018-2022. Dilakukan analisis untuk mencari nilai ambang batas ukuran meningioma dan besarnya rasio prevalensi untuk memprediksi kejadian edema peritumoral.

**Hasil :** Nilai *cut off* volume meningioma secara umum di intracranial adalah  $\geq 44 \text{ cm}^3$  dengan RP 3,61 ( $p=0,01$ ). Secara simultan volume tumor yang besar ( $\geq 44 \text{ cm}^3$ ) memiliki pengaruh paling besar terhadap kejadian edema peritumoral ( $p=0,01$ ). Nilai *cut off* volume meningioma di supratentorial non basis cranii adalah  $\geq 22 \text{ cm}^3$  dengan RP 2,54, sedangkan di supratentorial basis cranii adalah  $\geq 54 \text{ cm}^3$  dengan RP 23,33 ( $p=0,01$ ). Nilai *cut off* volume tumor meningioma di regio infratentorial adalah  $\geq 19,75 \text{ cm}^3$  dengan RP 3,0 ( $p=0,52$ ).

**Kesimpulan :** Secara umum, nilai *cut off* volume meningioma di intracranial untuk memprediksi kejadian edema peritumoral adalah  $44 \text{ cm}^3$ . Terdapat perbedaan nilai *cut off* volume meningioma dan rasio prevalensi berdasarkan lokasi spesifik di intracranial untuk memprediksi kejadian edema peritumoral meningioma

**Kata Kunci :** Meningioma, edema peritumoral, volume tumor

## PREDICTIVE VALUE OF TUMOR SIZE ON THE INCIDENCE OF PERITUMORAL EDEMA ON PRE-SURGERY HEAD MRI OF MENINGIOMA PATIENTS

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### ABSTRACT

**Background :** Peritumoral brain edema (PTBE) of meningioma causes morbidity, poor clinical outcomes and complicates surgery. Tumor size correlates with the incidence of PTBE. However, the threshold value for tumor size that cause PTBE in meningioma has not been widely studied.

**Objective:** To determine the threshold value for meningioma size that can predict the incidence of peritumoral edema in general and based on specific intracranial locations on pre-operative head MRI.

**Methods:** This is a cross sectional study on patients with intracranial meningioma who had undergone head MRI imaging at Dr.Sardjito Hospital in the period of 2018-2022 retrospectively. An analysis was carried out to find the threshold value for meningioma size and the prevalence ratio to predict the incidence of PTBE.

**Results:** The cut-off volume for intracranial meningioma was  $>44 \text{ cm}^3$  with RP of 3.61 ( $p=0.01$ ) in general. Simultaneously, large tumor volume ( $\geq 44 \text{ cm}^3$ ) has the strongest correlation to the incidence of peritumoral edema ( $p=0.01$ ). The cut-off volume for meningioma in supratentorial non-skull base was  $>22 \text{ cm}^3$  with RP of 2.54, while in supratentorial skull base was  $>54 \text{ cm}^3$  with RP of 23.33 ( $p=0.01$ ). The cut off volume for meningioma in infratentorial region was  $>19.75 \text{ cm}^3$  with RP 3.0 ( $p=0.52$ ).

**Conclusion:** The cut-off value for intracranial meningioma volume to predict the incidence of peritumoral edema is  $44 \text{ cm}^3$ . There are differences in the cut-off values of meningioma volume and prevalence ratios based on specific intracranial locations to predict the incidence of PTBE in meningioma.

**Keywords:** Meningioma, peritumoral edema, tumor volume