HUBUNGAN ANTARA KALSIFIKASI INTRATUMORAL MENINGIOMA INTRAKRANIAL PADA CT SCAN DENGAN DERAJAT MALIGNANSI

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INTISARI

LATAR BELAKANG: Meningioma adalah neoplasma intrakranial non-glial primer paling umum. Fitur pencitraan dapat memberikan petunjuk untuk memprediksi histopatologi dan derajat malignansi. Kalsifikasi intratumoral salah satu fitur radiologis yang memiliki asosiasi dengan proliferasi tumor. Mekanismenya antara lain dengan penyimpanan kalsium dalam sel tumor mati, jumlah berlebih dan aktivitas *alkaline phosphatase*, serta peran glikosidoprotein. Penulis ingin meneliti fitur radiologis ini apakah dapat diandalkan dalam memprediksi derajat malignansi sebelum operasi sehingga dapat meningkatkan pengambilan keputusan klinis.

TUJUAN: Mengetahui adakah hubungan antara kalsifikasi intratumoral meningioma intrakranial pada CT scan dengan derajat malignansi

METODE: Penelitian kuantitatif inferensial korelasional dengan data sekunder berupa kalsifikasi intratumoral meningioma intrakranial pada CT scan dan derajat malignansi yang kemudian dianalisis dengan uji hipotesis non-parametrik. Pengumpulan data dilakukan dengan mengakses data pasien melalui SIMETRISS, kemudian sampel dipilih dengan metode *nonprobability sampling* yaitu *consecutive sampling*. Dilakukan validasi data dengan dua dokter spesialis radiologi dengan pengalaman bekerja lebih dari 1 tahun.

HASIL: Berdasarkan alur rekrutmen, didapatkan 119 pasien sebagai sampel penelitian. Jenis kelamin *(p=0,034)*, kalsifikasi intratumoral *(p=0,032)*, dan homogenitas tumor *(p=0,022)* memiliki perbedaan proporsi signifikan dengan derajat malignansi *(p<α, α=0,05)*, sementara kelompok umur *(p=0,375)*, hiperostosis peritumoral *(p=0,073)*, densitas tumor *(p=0,827)*, dan edema perifokal *(p=0,104)* tidak terdapat perbedaan proporsi signifikan *(p>α, α=0,05)*. Koefisien korelasi jenis kelamin -0,225, kalsifikasi intratumoral -0,235, dan homogenitas tumor -0,248, menunjukkan korelasi negatif dengan kekuatan lemah, yang berarti jenis kelamin perempuan, tidak adanya kalsifikasi intratumoral, atau heterogenitas tumor lebih cenderung merupakan meningioma dengan derajat malignansi rendah (I). Meningioma intrakranial dengan kalsifikasi intratumoral memiliki kecenderungan derajat malignansi jinak 29 kali lebih besar daripada tanpa kalsifikasi intratumoral dan yang homogen memiliki kecenderungan derajat malignansi jinak 14 kali lebih besar daripada yang heterogen.

KESIMPULAN: Penelitian ini menunjukkan bahwa terdapat korelasi negatif antara kalsifikasi intratumoral meningioma intrakranial dengan derajat malignansi. Meningioma intrakranial dengan kalsifikasi intratumoral memiliki kecenderungan derajat malignansi jinak 29 kali lebih besar daripada tanpa kalsifikasi intratumoral. Hal ini menunjukkan bahwa adanya kalsifikasi dapat menjadi prediktor kuat derajat malignansi jinak pada meningioma intrakranial.

KATA KUNCI: kalsifikasi, meningioma, intrakranial, CT scan, derajat malignansi

CORRELATION BETWEEN INTRACRANIAL MENINGIOMA INTRATUMORAL CALCIFICATION ON CT SCAN WITH MALIGNANCY GRADE

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ABSTRACT

BACKGROUND: Meningioma is the most common primary non-glial intracranial neoplasm. Imaging features can provide clues to predict histopathology and degree of malignancy. Intratumoral calcification is one of the radiological features associated with tumor proliferation. The mechanisms include calcium storage in dead tumor cells, excess amount and alkaline phosphatase activity, and the role of glycosidoproteins. The author wants to examine whether this radiological feature can reliably predict the degree of malignancy before surgery so that it can improve clinical decision making.

OBJECTIVE: To determine whether there is a relationship between intratumoral meningioma intracranial calcification on CT scan with the degree of malignancy

METHOD: Correlational inferential quantitative study with secondary data in the form of intratumoral meningioma intracranial calcifications on CT scan and degree of malignancy which were then analyzed by means of a non-parametric hypothesis test. Data collection was carried out by accessing patient data through SIMETRISS, then the sample was selected using the non-probability sampling method, namely consecutive sampling . Data validation was carried out with two radiologists with more than 1 year of working experience.

RESULTS: Based on the recruitment flow, 119 patients were found as the study sample. Gender ($p=0.034$), intratumoral calcification ($p=0.032$) , and tumor homogeneity ($p=0.022$) had a significant proportion difference with the degree of malignancy ($p<\alpha$, $\alpha=0.05$), while the age group ($p=0.375$), peritumoral hyperostosis ($p=0.073$), tumor density ($p=0.827$), and perifocal edema ($p=0.104$) were no significant differences in proportion ($p>\alpha$, $\alpha=0.05$). The correlation coefficient for sex is -0.225, intratumoral calcification is -0.235, and tumor homogeneity is -0.248, indicating a negative correlation with weak strength, which means female gender, absence of intratumoral calcification, or tumor heterogeneity is more likely to be a meningioma with a low degree of malignancy. Intracranial meningiomas with intratumoral calcifications have a tendency for the degree of benign malignancy to be 29 times greater than those without intratumoral calcifications and those who are homogeneous have a tendency for the degree of benign malignancy to be 14 times greater than those who are heterogeneous.

CONCLUSION: This study shows that there is a negative correlation between intratumoral meningioma intracranial calcification and the degree of malignancy. Intracranial meningioma with intratumoral calcification has a tendency of 29 times greater degree of benign malignancy than without intratumoral calcification. This suggests that the presence of calcifications can be a strong predictor of the degree of benign malignancy in intracranial meningioma.

KEYWORDS: calcification, meningioma, intracranial, CT scan, malignancy grade