

Brain abscess differential diagnosis

The differential of an established abscess is essentially that of a ring enhancing lesion, and therefore includes:

[Metastasis](#) or [high-grade glioma](#) (e.g. GBM)

abscesses tend to have smoother inner wall

satellite lesions favour infection

abscesses may have low intensity capsule

rCBV elevated in high grade gliomas, reduced in abscesses

low intensity SWI rim of GBM

incomplete and irregular in 85%

within (rather than overlapping) the peripheral enhancement

absent dual rim sign

subacute infarction, haemorrhage or contusion

demyelination

[radiation necrosis](#)

When a lesion demonstrates both ring enhancement and central restricted diffusion the differential is very much narrowed, and although cerebral abscess is by far the most likely diagnosis, the following should also be included on the differential diagnosis:

cerebral metastases

necrotic adenocarcinoma.

ADC whole lesion histogram profiling provides a valuable tool to differentiate between morphologically indistinguishable mass lesions. Among the investigated parameters, the 10th percentile of the ADC volume distinguished best between GBM and BA ¹⁾.

¹⁾

Horvath-Rizea D, Surov A, Hoffmann KT, Garnov N, Vörkel C, Kohlhof-Meinecke P, Ganslandt O, Bätzner H, Gühr GA, Kalman M, Henkes E, Henkes H, Schob S. The value of whole lesion ADC histogram profiling to differentiate between morphologically indistinguishable ring enhancing lesions-comparison of glioblastomas and brain abscesses. *Oncotarget*. 2018 Apr 6;9(26):18148-18159. doi: 10.18632/oncotarget.24454. eCollection 2018 Apr 6. PubMed PMID: 29719596; PubMed Central PMCID: PMC5915063.

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