Brain abscess and empyema

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Abscesses arise when the brain is exposed directly , for example as a result of fracture or infection of an air sinus, or at surgery . They also result from haematogenous spread, typically in asso - ciation with respiratory and dental infections or endocarditis. In 25% of cases, no underlying primary infection is found. The organisms involv ed are normally bacteria, but immuno - compromised hosts in particular are vulnerable to a broad range of pathogens (Table 48.3). Typical presenting features include low-grade fever, confusion, seizures and focal deficit, often with equivocal b lood markers of inflammation; blood cultures should be obtained at an early stage. CT scan with contrast is the initial imaging modality of choice. Hypodense oedematous brain r epresenting early cerebritis is visible in the first few days (Figure 48.9). The classic appearances of a smooth-walled, well-defined, ring- enhancing mass develop as the abscess matures (Figure 48.10). The distinction between abscess and tumour can be di ffi cult and has important management implications since abscesses generally require urgent drainage. Restricted di ff usion evident on di ff usion-weighted MRI sequences is a valuable indicator of infective pathology (Figure 48.11). The mainstay of abscess management is early surgical drainage: mortality for patients treated in this way is about 4%, whereas it is gr eater than 80% in cases of ventriculitis due to rupture of an abscess into the ventricles. Up to 50% of patients with brain abscess will develop seizures at some stage, so that prophylactic anticonvulsants should be considered.

Figure 48.9 Axial computed tomography scan with contrast of a patient with frontal sinusitis presenting with seizures. Early cerebritis is evident in the left frontal region (arrow). Figure 48.11 The right frontal lesion evident on T2-weighted mag- netic resonance imaging (MRI) (main image) exhibits high signal on diffusion-weighted MRI sequences (top right inset) indicative of brain abscess. Figure 48.10 Axial computed tomography scan with contrast in the same patient as in Figure 48.9 2 weeks later. A ring-enhancing, smooth-walled lesion is evident; this is an abscess suitable for image- guided drainage. TABLE 48.3 Common causative organisms. Condition Organisms Sinus/mastoid infection Streptococci; Bacteroides ; enterobacteria; staphylococci; Pseudomonas Haematogenous spread Bacteroides ; streptococci Penetrating trauma Staphylococcus aureus ; Clostridium ; Bacillus ; enterobacteria Food contamination Toxoplasma ; pork tapeworm (neurocysticercosis) Immunocompromise HIV; Toxoplasma (protozoal); Cryptococcus (fungal); JC virus HIV, human immunode /f_i ciency virus; JC, John Cunningham.

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Presenting features are those of infection and intracranial mass lesion Imaging reveals a ‘ring-enhancing lesion’, with tumour usually the main differential Early diagnosis, usually followed by drainage, is key for good outcome

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