Background Acute rhinosinusitis (inflammation of the mucosal lining of the nasal passage and paranasal sinuses) is a common and predominantly benign problem in children and young people. Although the initial infection is usually viral in aetiology, it may be complicated by superimposed bacterial infection of the sinus cavities. Rarely, contiguous spread can result in epidural abscess, subdural empyema (SDE) or brain abscess, with significant associated mortality and morbidity. Outcomes have greatly improved with recent advancements in diagnostic imaging as well as changing neurosurgical approaches. However, there remains a lag period between onset of clinical features and diagnosis, which may be due to the subtle development of intracranial signs in an already unwell child.

Objectives We aimed to conduct the largest focused analysis of paediatric sinogenic SDE in the UK to date. Previous descriptive studies have analysed this cohort alongside other intracranial supplicative infections, despite recognised differences in the clinical features and management of these conditions. We examine the chronology of events leading up to the diagnosis of SDE, and evaluate the subsequent management at our neurosurgical centre. We focus on clinical features so as to be particularly relevant any clinician assessing children in an acute setting.

Methods We performed a retrospective analysis of all cases of sinogenic SDE in children and young people (<18 years) managed in our tertiary neurosurgical centre in the UK, from January 2011 to December 2020. Descriptive data is presented on patient demographics, presenting features, management and outcomes.

Results Over a 10-year period, we identified 20 patients with a diagnosis of sinogenic SDE, equivalent to an incidence of approximately 4/1,000,000/year. Median age at presentation was 11 years, with a male preponderance (75%), consistent with previous studies. The classical triad of symptoms widely acknowledged as indicative of intracranial infection (headache, fever and vomiting) was not present in any of the patients. These were present in 80%, 45% and 25% of patients, respectively. 20% of patients had experienced at least one seizure prior to presentation. 79% of patients had signs of intracranial involvement on initial examination; most commonly altered consciousness, focal weakness, and cranial nerve palsy. At our centre, subsequent management progressed rapidly following clinical suspicion of SDE; the median time to definitive surgical intervention was 1 day. Mortality was 15%, consistent with previous reports, and 2/3 cases of mortality occurred prior to surgical intervention. 33% of surviving patients had evidence of ongoing neurological deficit, with a median follow-up duration of 1.5 years.

Conclusions This study represents the largest focused analysis of paediatric sinogenic SDE in the UK. Our data emphasise the importance of thorough neurological examination in evaluation of patients with rhinosinusitis, which is likely to be challenging in a child who may already present as lethargic and uncooperative. A streamlined in-hospital management pathway exists at our centre (similar to others in the UK); however, initiation of this relies on a high index of suspicion for intracranial infection in the assessing clinician, both in primary and secondary care.