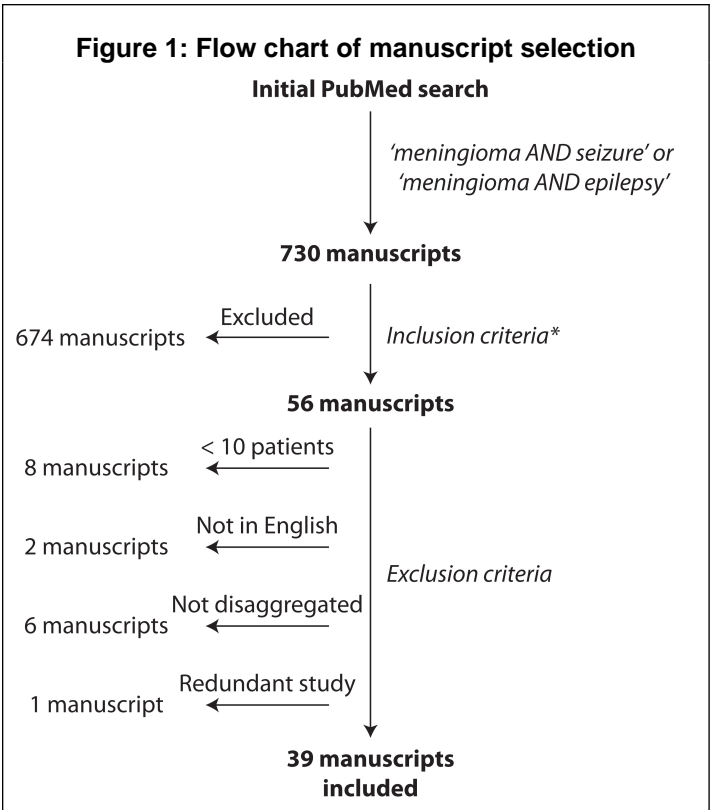


Introduction

Meningiomas are the most common benign intracranial tumor, and patients often suffer from seizures. Seizure rates and predictors in meningioma have been significantly understudied, even in comparison with other brain tumor types. Better strategies for prediction, treatment, and prevention of seizures in meningioma patients is an important goal, as tumor-related epilepsy significantly impacts patient quality of life.

Methods

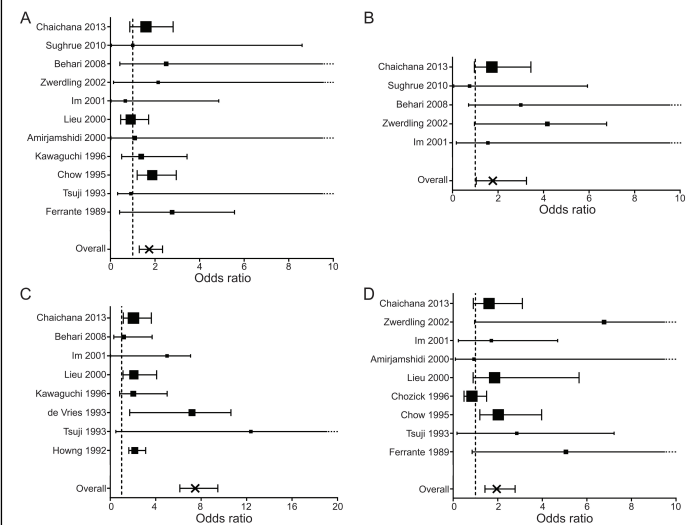
We performed a systematic review of the literature (Figure 1) between 1980 and September 2014, examining rates of pre-operative and post-operative seizures in supratentorial meningioma, and evaluating potential predictors of seizures with separate meta-analyses.



Results

We identified 39 observational case series for inclusion in our study. Pre-operative seizures were observed in 29.2% of 4709 patients with supratentorial meningioma, and were significantly predicted by male gender (OR = 1.74; 1.30-2.34, 95% CI), absence of headache (OR = 1.77; 1.04-3.25, 95% CI), peritumoral edema (OR = 7.48; 6.13-9.47, 95% CI), and non-skull base location (OR = 1.77; 1.04-3.25, 95% CI), as summarized in Figure 2.

Figure 2: Meta-analyses examining factors associated with pre-operative seizures in supratentorial meningioma



A) male (vs. female) gender, B) absence (vs. presence) of headache, C), the presence of peritumoral edema on neuroimaging (vs. no or minimal edema), and D) skull base (vs. non-skull base) tumor location.

After surgery, seizure freedom was achieved in 69.3% of 703 patients with pre-operative epilepsy, being twice as likely in those without peritumoral edema. Out of 1085 individuals without pre-operative epilepsy who underwent resection, new post-operative seizures were seen in 12.3% of patients. No difference in post-operative seizure rates were observed with or without prophylactic anticonvulsants.

Conclusions

Seizures are common in supratentorial meningioma, particularly with tumors associated with brain edema, and seizure freedom is a critical treatment goal. Favorable seizure control can be achieved with resection, but evidence does not support routine prophylactic anticonvulsants in patients without seizures.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe rates and predictors of pre-operative seizures in supratentorial meningioma, 2) Describe post-operative seizure outcomes in meningioma resection, and 3) Discuss the utility of peri-operative prophylactic anticonvulsants during meningioma surgery in patients without a history of seizures.