

Intracranial Arachnoid Cysts; Epidemiology, Morphology and Surgical Outcome

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Europa, Wallenbergs konferenscentrum, Medicinargatan 20A, Göteborg, fredagen den 3 juni 2016, kl. 9.00

av Katrin Rabiei

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Avhandlingen baseras på följande delarbeten

- I. Rabiei K, Jaraj D, Marlow T, Jensen C, Skoog I, Wikkelsø. Prevalence and Symptoms of Intracranial Arachnoid Cysts: A Population-based Study. *Journal of Neurology*, 2016 Apr; 263 (4), 689-694
- II. Rabiei K, Hellström P, Johansson-Högfeldt M, Tisell M. Does subjective improvement in adults with Intracranial Arachnoid Cysts Justify Surgical treatment? Submitted
- III. Rabiei K, Johansson-Högfeldt M, Doria-Medina R, Tisell M. Surgery for Intracranial Arachnoid Cysts in Children- A Prospective Long-term Study. *Child's Nervous System*, E-pub ahead of print, 2016 March 21
- IV. Rabiei K, Tisell M, Wikkelsø C, Johnsson B. R. Diverse Arachnoid Cyst Morphology Indicates Different Pathophysiological Origins. *Fluids and Barriers of the CNS*, 2014 March 3; 11 (1): 5

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Abstract

Background: Intracranial arachnoid cysts (AC) are malformations of the arachnoid membrane. They may cause symptoms, either by obstruction of the CSF flow or by compression of adjacent neural tissues. The aim of this thesis was to study the prevalence of AC and its relationship with the most common symptoms and signs, the morphology of AC, and the outcome after surgical treatment in children and adults.

Patients and methods: The prevalence of AC and its relationship with the most common symptoms ascribed to it were examined in a population of 1235 individuals. For each case, ten age-matched controls were chosen from the same cohort for comparison of symptoms.

The clinical studies comprised two prospective studies: one in adults and one in children. Twenty-seven children and 125 adults were consecutively included. Of these, 22 children and 53 adults underwent surgery. Adults were investigated with a neuropsychological, clinical and physiotherapeutic test battery. Surgically treated adults underwent neuropsychological and balance tests five months postoperatively. Children were followed up both three months and 8.6 years (7-10.5 years) postoperatively. Volumetric measurements were performed for all included patients. AC morphology was investigated in tissue samples by light and electron microscopy in 24 consecutive patients included in/operated on in Study II and III.

Results: The prevalence of AC in the general population was 2.3 % with no difference between men and women. No relationship with the most common symptoms ascribed to AC was detected.

In surgically treated children, 59 % reported improvement after three months and 77 % after the long-term follow-up. Fifty-nine per cent still experienced remaining symptoms. In adults, 77 % reported improvement after the short-term follow-up; however, no improvement in the test results was seen postoperatively. No correlation was found between the reduction in AC volume and improvement, neither in adults, nor in children. ACs could be divided into three groups, based on their diverse morphology.

Conclusion: ACs are a common finding in the general population. The diverse morphology in AC suggests more than one pathophysiological origin of these cysts. The results after surgical treatment, together with the difficulties to link what has been considered characteristic symptoms in the presence of AC, suggest that a restrictive approach should be taken with regard to surgical treatment of AC in the absence of hydrocephalus.

Keywords: Arachnoid cysts, Cyst morphology, Epidemiology, Headache, Surgical outcome

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