Pediatric Intracranial aneurysm

This group can be said to constitute a separate and novel entity [1].

Primary cerebral aneurysms (i.e., of noninflammatory or nontraumatic etiology) are rare in the pediatric age group, especially in infancy.

Spontaneous thrombosis of a cerebral aneurysm in a child is very rare, particularly in a non-giant aneurysm.

Eleven cases of intracranial arterial aneurysms in patients under 15 years of age, were treated from 1959 to 1976, The preponderance of aneurysms at the internal carotid artery bifurcation and the peculiarities of the defects in this location are remarkable [2].

Aneurysms in the paediatric age group may be found in unusual locations, more peripherally than usually seen in the adult population, (b) in seven patients, the aneurysm was of giant size; two of these produced symptoms by mass effect, © in two patients with subacute bacterial endocarditis the aneurysm was mycotic; the inflammatory fusiform dilatation of the entire circle of Willis in one case was associated with generalized candidiasis, (d) an antecedent head injury in a child may so prejudice the initial clinical assessment that the possibility of haemorrhage from aneurysm is overlooked, and (e) gradual vertebral artery ligation, to reduce the pressure-head in fusiform aneurysms, is well tolerated by the young patient, even when done bilaterally [3].

Case series

Demartini et al. evaluated clinical data, aneurysm characteristics, and therapeutic results in a series of patients younger than 19 years of age with intracranial aneurysms.

A retrospective cross-sectional observational study design analyzed medical records and imaging studies. Variables included age, sex, clinical presentation, comorbidities, aneurysmal characteristics, treatment modality, and clinical outcomes.

They identified 15 intracranial aneurysms in 11 patients (6 male), with ages ranging from 3 months to 15 years (mean age 5.2 years). Five patients had associated medical conditions, and hemorrhage was the most frequent clinical presentation (45%). Three patients (27%) had multiple aneurysms, and seven aneurysms were fusiform or dysplastic. The internal carotid artery was the most affected site, involved in 47% of cases. Aneurysm size ranged from 2 to 60 mm (mean 16.8 mm), with giant aneurysms in 27%. Seven patients were treated with endovascular procedures, while three aneurysms were clipped. Symptomatic vasospasm requiring angioplasty occurred in two patients and led to worse outcomes. One patient died due to severe aspiration pneumonia and sepsis that precluded treatment. Good functional outcome (modified Rankin scale - mRS ≤ 2) was achieved in all treated patients (91%).

The patients with aneurysms in this series were mostly male, presented mostly hemorrhagic syndromes, and mainly had internal carotid artery involvement. The outcome of treated patients was favorable, regardless of treatment modality [4]

Case reports

Motohashi et al., report a case of a 1-month-old girl with a distal anterior cerebral artery aneurysm which disappeared spontaneously after subarachnoid hemorrhage and reappeared 6 months later. Surgical resection of the aneurysm was performed and she discharged uneventfully 10 days later. Histological examination revealed an aneurysm with a fibrous muscular layer, absence of the internal elastic lamina and partial hypertrophy of the intimal layer. Though the pathogenesis of this aneurysm is uncertain, two hypotheses are discussed [5)]

A ten month old unconscious boy with hemiplegia (Hunt and Hess IV) was first admitted to a district hospital without a CT scanner or a neurosurgical service (Glasgow-Coma-Score 4, no pathological pupillary signs). Therefore, he was transferred to the Pediatric Department of the University Hospital the same night. An emergency CT scan that night showed intracerebral and subarachnoid hemorrhage with enlarged ventricle (Fisher grade 5). Angiography was not available within reasonable time. Thus in the stage of progressively increasing clinical deterioration, still without pupillary signs, an external ventricular drain-age was placed. Immediately after reduction of the cerebrospinal fluid volume, arterial hypertension was noticed–the right pupil was mydriatic and fixed. Without further apparative diagnosis an emergency craniotomy was performed for decompression under the suspicion of a secondary hemorrhage due to a rerupture of a middle cerebral artery aneurysm. A bleeding aneurysm of the right middle cerebral artery was found and clipped. A mass transfusion was necessary and a pulmonary air embolism occurred. The infant died in tabula. The histological specimens revealed disruption of the internal elastic membrane of both MCA. This emphasizes a congenital nature of the aneurysm. Hülsmann et al., conclude that cerebral arterial aneurysms have to be considered in the differential diagnosis of stroke-like symptoms in infancy and early childhood, although the incidence of reported cases is less than one case per year. Since no valid screening parameter is available, diagnosis is often made only after rupture of the aneurysm. This causes problems for emergency management. Infants and children with stroke or stroke-like symptoms should immediately be transferred to a hospital with a neurosurgical unit [6)].

A case of intracranial saccular aneurysm with intracerebral haematoma occurring in early childhood and presenting with sudden loss of consciousness and right hemiparesis is reported. The aneurysm was located in the opercular portion of the left middle cerebral artery. Surgery, besides removing the intracerebral haematoma, involved clipping and complete removal of the aneurysmal sac. The child made an uneventful recovery, and he is completely safe after 40 months. Microscopic examination of the lesion shows disruption of the normal sequence of the original layers, with widespread inflammatory cells [7)].

1)
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