Pediatric Intracranial Aneurysms: Characteristics, Presentation, Management and Outcome

Yasser Orz, Mahmoud AlYamany, Zoheir Hassan, Sultan AlQahtany

1Neurosurgery Department, 2Neurointervention Department, National Neurosciences Institute, King Fahad Medical City, Riyadh, Saudi Arabia
Epidemiology

Pediatric versus Adult Ans.

- Pediatric intracranial aneurysms are rare: incidence 0.5-5% in literatures.
- Male predominance
- Multiple Ans. less
- ICA bifurcation Ans. are Commonest
- Post. Circulation Ans. more
- Giant/Complex Ans. More
- Rebleed less
Pediatric versus Adult Ans.

• 75 % of patients presented with SAH
• HH grade usually good
• Surgical tolerance is better
• Vasospasm is less & tolerated better due to better collaterals
• Delayed ischemic deficits /Infarcts are less
• Bacterial and traumatic an. are commoner
Our Materials

• From 2007-2016
• 400 intracranial aneurysms
• 20 (5%) pediatric patients (< 18 years old)
• 30 aneurysms were found in these patients (one patient has 8 aneurysms) and 2 has double aneurysms.
Patient related variables

- Age range (12-18Y)
- 60% are boys (12 patients)
- One patient has congenital cardiac disease
- 13 patients (65%) presented with ruptured aneurysms, 11 of them (85%) has good H&H (1-3) grades.
- 3 patients had seizures
Aneurysm related variables

• 11 patients (55%) has aneurysms located at the internal carotid bifurcation.
• 3 patients (15%) have multiple aneurysms one of them has 8 aneurysms in different locations.
• 3 patients (15%) had giant aneurysms
• Most aneurysms (80%) are small (<7 mm in size)
• 9 aneurysms (45%) have bilobular or multilobular shape.
Management related variables

- 16 patients (80%) treated surgically by clipping of their aneurysms.
- 4 patients treated by stenting and or coiling one Pcom., 2 with unruptured paraclinoidal aneurysm, one with dissecting vertebral and the other with ruptured midbasilar aneurysm the rest of his 8 aneurysms treated by observation.
Outcomes

- 15 patients (75%) had good outcome according to GOC.
- One patient died (he had 8 aneurysms) as he lost follow up for 5 years and came back with new SAH grade 4.
- One patient has 2 Do-Novo aneurysms (ruptured Rt. Pcom. and unruptured Rt. Ophth.) diagnosed 7 years after clipping of ruptured Lt. IC Bif. The ruptured Rt. Pcom was coiled the Ophth. one is stented and coiled.
- No residual, regrowth or recanalization of the managed aneurysms in the follow up angio.
Case 1: 13 Y/O male, congenital cardiac disease, Has 8 aneurysms, SAH grade 1 due to rupture midbasilar aneurysm stented and coiled. 4 years later another SAH Grade 4. Died
Case 2: 12 Y/o male, SAH, H&H 2, left IC Bif. Clipped
After 7 years another SAH due to Rt. Pcom. Coiled still he has Rt. IC-Ophth.
Conclusions

• Pediatric aneurysms are best managed with multidisciplinary team familiar with all aspect of this rare disease.

• The pediatric unruptured aneurysm should be treated as the cumulative annual risk of rupture is much higher and place the patient at a substantial life time risk of rupture. **So, treatment of pediatric unruptured aneurysm is therefore compelling.**
Conclusions

• Children with intracranial aneurysms require long-life follow up as additional aneurysms could arise or treated one can recur.

• Vigilant long term follow up clinically and with minimally invasive imaging surveillance is warranted.

• Pediatric intracranial aneurysms should be considered as a potentially chronic progressive condition.
Thank You