

# Differences between adult and childhood neuroophthalmology

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Children are not simply little  
adults

# History in neuroophthalmology

- difficult and unreliable in many children

# Examination in neuroophthalmology

- Visual acuity: difficult and unreliable in many children
- Color vision : difficult and unreliable in many children
- Automated visual field: difficult and unreliable in many children
- Fundoscopy: difficult in many children
- OCT: difficult in many children, no reliable normative data in many machines.

# Investigations in neuroophthalmology

- MRI:needs GA most of the time
- LP: sometimes needs GA

What to do if you have a child with neuroophthalmic presentation and you are unable to deal with?

# REFERRAL !



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- If general ophthalmologist-→refer to ped or neurooph
- If ped oph -→refer to neurooph
- If neurooph -→refer to ped oph
- If you are a ped ophthalmologist and neuroophthalmologist-→no body to refer to!



We present 3 scenarios where there are differences

# Idiopathic intracranial hypertension IIH

presentation

In adults:

- More in females ,more in obese

In children:

- Equal in males and females
- No strong association with obesity

# Presentation

adults

Headache, diplopia, periorbital pain

Children

Asymptomatic in 1/3 of patients!, irritability, behavioral changes (they can of course present as adults)

# Criteria for children IIH

- Definite IIH
  - Papilledema;
  - Normal MRI or CT of the brain parenchyma;
  - Normal venous system on MRV or CTV;
  - Normal CSF composition;
  - Elevated intracranial pressure by lumbar puncture (>28 cm water for pediatric patients, >25 cm water if patient is not sedated or obese) or;
    - Lack of papilledema with presence of sixth nerve palsy and #2–5 from above.
- Probable IIH
  - All characteristics of definite IIH except normal measured intracranial pressure by lumbar puncture.
- Suggested IIH
  - Lack of papilledema and lack of sixth nerve palsy but presence of #2–5 and neuroimaging findings such as distension of the perioptic subarachnoid space with or without optic nerve tortuosity, flattening of the posterior aspect of the globe, empty sella, and transverse venous sinus stenosis.

# Optic neuritis

- Adults:

- more in females

- can be part of multiple sclerosis (MS) or neuromyelitis optica (NMO)

- Children

- Equal in males and females

- In addition to MS and NMO, can be part of acute disseminated encephalomyelitis (ADEM)

# Presentation ON

- Adults

decreased visual acuity, dyschromatopsia, and visual field defects usually unilateral

- Children:

Same symptoms, but severely affected vision (60% of children presenting with VA worse than 20/200)

more bilateral involvement either simultaneous or sequential,  
less pain on eye movement

More optic nerve edema

- ON in children may be an isolated monophasic event or it may be post-infectious, inflammatory or part of a systemic demyelinating disorder.

# Treatment of pediatric ON

- no prospective randomized trials
- intravenous methylprednisolone for a course of 3–5 days (20–30 mg/kg/day up to 1 g/day) extrapolated from the adult ON treatment trial



# Childhood Horner syndrome

- Adults:

ptosis, miosis, anhidrosis

Children:

In addition, iris heterochromia



# causes

- Adults:

- **Stroke**
- **CNS masses**
- **Carotid Artery Aneurysms / Dissections**

Rarely Apical tumor (ex, pancoast tumor)

## Children

- **Birth Trauma**
- **Mediastinal Masses**
- **Benign Neck Masses** (ex, lymphadenopathy)
- **Infectious Masses** (ex, Tuberculosis)

One important condition to keep in mind is [Neuroblastoma](#).

- Unusual, but is the **most significant treatable cause** of Horner Syndrome in children.

# Work up

- Adults:

MRI, MRA of head and neck

Children:

MRI of neck, chest and abdomen for neuroblastoma

No need for MRA

Urine catecholamine metabolites

THANK YOU