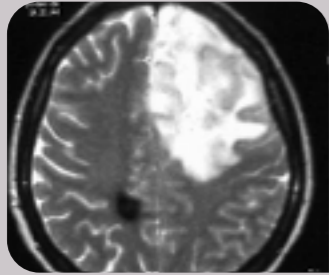
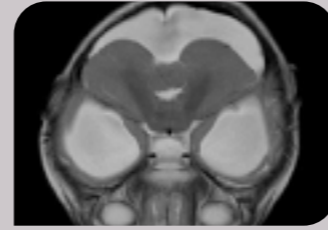


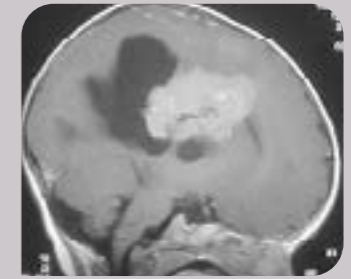
PRESENTING SYMPTOMS OF BRAIN TUMOURS BY SUB-SPECIALTY



Supratentorial tumours can cause change in personality, mood or disinhibition. They can also cause symptoms of anorexia. A brain tumour needs to be considered as part of the differential diagnosis.



A young child with hydrocephalus caused by a brain tumour will have an increasing head circumference and developmental delay or regression.



A supratentorial cortical tumour will present with focal neurological signs such as weakness.

PSYCHIATRY



- Anorexia
- Behavioural change
- Depression
- Psychosis

COMMUNITY

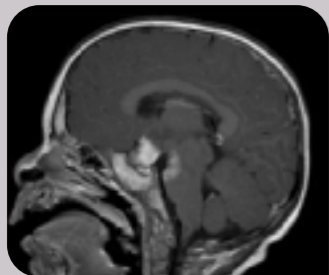


- Developmental delay
- Developmental regression
- Increasing head circumference

NEUROLOGY



- Seizures
- Motor weakness
- CN palsies
- Ataxia/cerebellar
- Focal neurological deficits



Central tumours such as optic pathway glioma are slow growing and will present with progressive visual symptoms that may present to an ophthalmologist.

OPHTHALMOLOGY



- Papilloedema
- Decreased visual acuity
- Nystagmus/parinauds
- Diplopia
- Squint
- Visual field defect
- Blindness
- Ptosis
- Proptosis
- Ocular palsies
- Ophthalmoplegia



ENDOCRINOLOGY



- Growth problem
- Hypo-pit/pituitary dysfunction
- Diabetes insipidus
- Precocious or delayed puberty
- Menstrual irregularities
- Galactorrhoea
- Gynaecomastia
- Cushing's
- Obesity/weight gain



Central tumours such as a craniopharyngioma are slow growing and will present with abnormal growth or precocious or delayed puberty. These children may also have visual symptoms.



Head tilt or torticollis can be caused by a posterior fossa tumour. These symptoms may present to ENT specialists as head tilt and torticollis have other common ENT causes.

EAR, NOSE AND THROAT



- Dizziness
- Vertigo
- Torticollis
- Head tilt
- Hearing loss
- Tinnitus

GASTROENTEROLOGY



- Nausea and vomiting
- Abdominal pain
- Reflux
- Failure to thrive
- Dysphagia

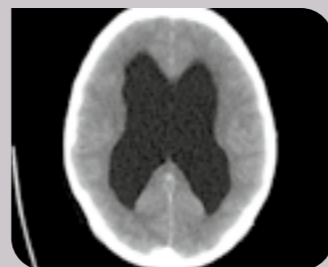
RESPIRATORY



- Recurrent chest infections
- Apnoeas



Recurrent respiratory infections can occur secondary to aspiration caused by a bulbar palsy. This MRI shows a brainstem tumour which causes cranial nerve palsies.



A child with hydrocephalus caused by a brain tumour will have persistent vomiting. In infants where the sutures are not yet fused there will be no other signs of hydrocephalus aside from macrocephaly.

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THE DIAGNOSIS OF BRAIN TUMOURS IN CHILDREN: A GUIDELINE FOR HEALTHCARE PROFESSIONALS

Headaches

- Consider a brain tumour in any child with a new, persistent* headache
- Headache in isolation, unlikely to be a brain tumour
- Brain tumour headaches occur at any time of day
- Children aged younger than 4 years may not be able to describe a headache – observe behaviour

CNS imaging required with

- Persistent headache that wakes a child from sleep
- Persistent headache that occurs on waking
- Persistent headache in a child under 4
- Confusion or disorientation with a headache
- Persistent headache with 1 or more other symptoms

Common pitfalls

- Failure to reassess a child with a migraine or tension headache when the headache character changes

*Persistent = continuous or recurrent headache present for more than 4 weeks

Nausea and vomiting

- Consider a brain tumour in any child with persistent* nausea and/or vomiting
- Head circumference should be measured and plotted in children under 2 with persistent vomiting

CNS imaging required with

- Persistent vomiting on waking (NB: exclude pregnancy where appropriate)
- Persistent nausea/vomiting with 1 or more other symptom

Common pitfalls

- Failing to consider a CNS cause for persistent nausea and vomiting

*Persistent = nausea and/or vomiting present for more than 2 weeks

Visual signs and symptoms

- Consider a brain tumour in any child with persistent* visual abnormality
- Visual assessment requires assessment of:
 - visual acuity
 - eye movements
 - pupil responses
 - optic disc appearance
 - visual fields (>/= 5 yrs)
- Pre-school and unco-operative children should be assessed by hospital eye service within 2 weeks of referral
- Parent concern alone warrants referral for visual assessment

CNS imaging required with

- Papilloedema
- Optic atrophy
- New onset nystagmus
- Reduction in visual acuity not due to refractive error
- Visual field reduction
- Proptosis
- New onset paralytic squint
- Visual symptom with 1 or more other symptom

Common pitfalls

- Failure to fully assess vision – REFER IF NECESSARY
- Failure of communication between community optometry and primary and secondary care

*Persistent = visual abnormality present for more than 2 weeks

Referral from primary care

- High risk of tumour – SAME DAY referral to secondary care
- Lower risk* – specialist assessment within 2 weeks

Imaging

- High risk of tumour – URGENT CNS imaging
- Lower risk* – CNS imaging within 4 weeks

*Lower risk = CNS tumour in differential diagnosis, low index of suspicion

CONSIDER A BRAIN TUMOUR IN ANY CHILD PRESENTING WITH

- Headache
- Nausea and/or vomiting
- Visual symptoms and signs:
 - reduced visual acuity and/or fields
 - abnormal eye movements
 - abnormal fundoscopy
- Motor symptoms and signs:
 - abnormal gait
 - abnormal co-ordination
 - focal motor weakness
- Growth and endocrine symptoms:
 - growth failure (weight/height)
 - delayed, arrested or precocious puberty
 - galactorrhoea
 - primary/secondary amenorrhoea
- Increasing head circumference
- Behavioural change
- Diabetes insipidus
- Seizures (see www.nice.org.uk/guidance/qs27)
- Altered consciousness (see www.nottingham.ac.uk/paediatric-guideline/Guidelinealgorithm.pdf)

Ask about common predisposing factors

- Personal or FH of brain tumour, sarcoma, leukaemia or early onset breast cancer
- Neurofibromatosis
- Tuberous sclerosis
- Other familial genetic syndromes

Assessment pitfalls

- Initial symptoms of brain tumour can mimic other common illnesses
- Symptoms frequently fluctuate – resolution then recurrence does not exclude a brain tumour
- A normal neurological examination does not exclude a brain tumour
- Language difficulties – use interpreter

Assess these children with

- History: associated symptoms, any predisposing factors
- Examination of:
 - visual system
 - motor system
 - height and weight
 - head circumference (<2yrs)
 - pubertal status

IF TWO OR MORE SYMPTOMS – SCAN

This guideline has the support of the RCPCH following a rigorous assessment of the guideline development methodology and a full endorsement is expected upon completion of a full stakeholder consultation.

headsmart.org.uk

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Head circumference

- Consider a brain tumour in any child under two years with an increasing head circumference outside the normal range in comparison to their height and weight
- Careful assessment of other signs and symptoms of a brain tumour should be undertaken in these babies

CNS imaging required with

- Rapid rate of head circumference growth crossing centiles
- Increasing head circumference with any other associated symptoms

Common pitfalls

- Failing to measure and monitor head circumference in a baby or young child with persistent vomiting

Motor symptoms and signs

- Consider a brain tumour in any child with persisting* motor abnormality
- Motor assessment requires history or observation of:
 - sitting and crawling in infants
 - walking and running
 - handling of small objects
 - handwriting in school age children
- Brain tumours can cause a loss or change in motor skills and this can be subtle e.g. ability to play computer games

CNS imaging required with

- Regression in motor skills
- Focal motor weakness
- Abnormal gait/co-ordination (unless local cause)
- Bells palsy with NO improvement within 4 weeks
- Swallowing difficulties (unless local cause)
- Head tilt/torticollis (unless local cause)
- Motor symptom with 1 or more other symptom

Common pitfalls

- Attributing abnormal gait/balance to middle ear disease with no corroborating findings
- Failure to identify swallowing difficulties and aspiration as a cause of recurrent chest infections

*Persistent = motor abnormality present for more than 2 weeks

Growth and endocrine

- Consider a brain tumour in any child with any combination of growth failure, delayed/arrested puberty and polyuria/polydipsia
- Early specialist assessment if required for:
 - precocious puberty/delayed or arrested puberty
 - growth failure
 - galactorrhoea
 - primary or secondary amenorrhoea

CNS imaging required with

- Growth or endocrine symptom with 1 or more other symptoms

Common pitfalls

- Failing to consider a CNS cause in children with weight loss and vomiting
- Failure to consider diabetes insipidus in children with polyuria and polydipsia

Behaviour

- Consider a brain tumour in any child with new onset lethargy, mood disturbance, withdrawal or disinhibition

Common pitfalls

- Failing to consider a physical cause for behavioural symptoms