Open Access MRI & Headache Assessment: Vomit Syndrome or is it?

15th March 2012

Migraine Trust/BASH GPwSI Meeting

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North Midlands Regional Headache Clinic
University Hospital of North Staffordshire

Talk Outline

- Why would I want to order Brian MRI in someone with Headache?
  - Epidemiology of headache presentation
  - Secondary Headache not to miss ?
  - Headache Phenotypes to image?
- Red flags for important headache disorders?
- Pitfalls with Imaging in Headache
  - VOMIT !
  - Population prevalence of common findings !
- Who to refer? a personal view?
  - "Anti-emetic" imaging - What do you expect the scan to show?
  - What scan ? Does it matter?

"The patient with headache often finds them self the medical orphan.

They are fortunate indeed if their headache is transient, for otherwise they may find themself on an excursion to the opthalmologist, ENT department, neurologist, dentist, psychiatrist, chiropractor and the latest health spa.

They may be x-rayed, fitted with glasses, analysed, massaged, relived of their turbinates and teeth and often emerge despite this with their headache intact"

Adapted from Packard 1979

Will GP Open Access MRI help them?

Headache: A Common Problem

One of the commonest symptoms that clinicians evaluate

General Practice & Primary Care
4.44 consultations/100 registered patients

Headache Referrals to secondary care

Neurology OPD clinic referral rate by GPs in UK
2 in every 100 headache sufferers seen by GP
(Latnovic et al. (2006): JNNP;77: 385-87)

≈ 20% of referral population to Neurology OPD

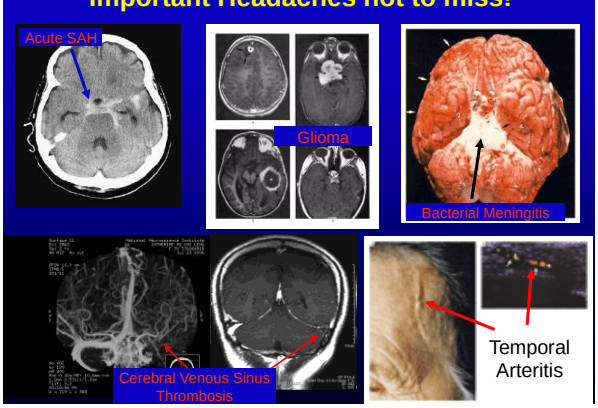
Self-presentation & GP referral to A&E in UK
1-2% of all Acute presentations

Headache assessment in Non-specialist Primary Care

Migraine
- When primary care physicians diagnose migraine, they are correct 98% of the time
- However, when they diagnose non-migraine headache, they are wrong 82% of the time
  Source: LANDMARK study (Headache 2004;44:856-864)

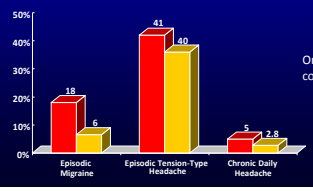
Cluster Headache
- Median time to diagnosis in Cluster Headache
  - in 1960s was 22 years; now 2.6 years
  - average of 3 GPs seen before diagnosis

Important Headaches not to miss!



The Scope of the problem
Population headache demographics

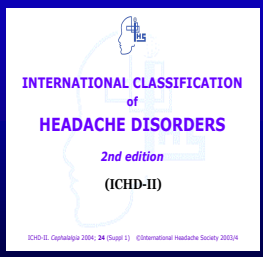
	Prevalence	&	Incidence
• Migraine	6-18 per 100	SAH	10 per 100, 0000
• Cluster HA	1 per 1,000	Dissection	3-5 per 100,000
• Other TACs	Rare	Brain Tumour (all types)	7 per 100,000 25-60% have headache Isolated headache only 2<16% of tumours



One-year prevalence of common headache disorders

The Primary Headaches

- **Migraine**
- **Tension-Type headache**
- **Cluster headache**
- Trigeminal Autonomic Cephalagias
  - Paroxysmal hemicrania
  - SUNCT
- Other
  - Primary Stabbing headache
  - Primary Cough headache
  - Primary Exertional headache
  - Primary Thunderclap headache
  - Primary Sexual headache
  - Hypnic headache
  - New Daily Persistent Headache
  - Hemicrania Continua



The Primary Headaches
Who to scan? Controversies?

- **Migraine**
- **Tension-Type headache**
- **Cluster headache** → SCAN ?
- Trigeminal Autonomic Cephalagias → SCAN ?
  - Paroxysmal hemicrania
  - SUNCT
- Other
  - Primary Stabbing headache
  - Primary Cough headache → SCAN
  - Primary Exertional headache
  - Primary Thunderclap headache → SCAN
  - Primary Sexual headache → SCAN ?
  - Hypnic headache
  - New Daily Persistent Headache → SCAN
  - Hemicrania Continua

Classification of secondary headaches

- Less common than primary headache but epidemiology dependent on epidemiology of underlying cause
- IHS Classification: [Sections 1-4 used for Primary Headaches]
  5. Headache attributed to head and/or neck trauma
  6. Headache attributed to cranial or cervical vascular disorder → SCAN
     - e.g. Stroke, Haemorrhage, Dissection, Venous thrombosis, Arteritis
  7. Headache attributed to non-vascular intracranial disorder → SCAN
     - e.g. High and Low CSF pressure, Tumours, Chiari malformation
  8. Headache attributed to a substance or its withdrawal
     - e.g. Medication Overuse Headache, withdrawal of caffeine, opiates, oestrogen
  9. Headache attributed to infection
     - e.g. Meningitis, Encephalitis
  10. Headache attributed to disorder of homoeostasis
      - e.g. Sleep apnoea
  11. Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures → SCAN ?
      - e.g. Cervicogenic, Acute Glaucoma, Sinusitis, TMJ pain
  12. Headache attributed to psychiatric disorder
      - e.g. Somatisation, Psychosis

The Spectrum of Migraine

Panel 1: Classification of migraine subtypes according to the International Headache Society 2004 criteria

1.1 Migraine without aura → 80%
1.2 Migraine with aura → 15%
} 30%
1.2.1 Typical aura with migraine headache
1.2.2 Typical aura with non-migraine headache
1.2.3 Typical aura without headache
1.2.4 Familial hemiplegic migraine → 0.01%
1.2.5 Sporadic hemiplegic migraine → < 10% ?
1.2.6 Basilar-type migraine
1.3 Childhood periodic syndromes that are commonly precursors of migraine
1.3.1 Cyclical vomiting
1.3.2 Abdominal migraine
1.3.3 Benign paroxysmal vertigo of childhood → Unclear
1.4 Retinal migraine
1.5 Complications of migraine
1.5.1 Chronic migraine → 2- 4%
1.5.2 Status migrainosus
1.5.3 Persistent aura without infarction
1.5.4 Migrainous infarction
1.5.5 Migraine-triggered seizure
1.6 Probable migraine
1.6.1 Probable migraine without aura
1.6.2 Probable migraine with aura
1.6.3 Probable chronic migraine

But 20-60% of my clinic patients !!

IHCD II Classification 2004
Cephalagia Vol 24; Suppl 1

Indications for Brain imaging investigation for Headache as recommended by guidelines (Adapted from Kernick 2011)

Presentation	SIGN[5]	EFNS[4]	NICE[7]	BASH[3] (for general practice)	BASH[3] (for suspected brain tumour)	US Headache Consortium[2]
New onset over the age of 50 years	✓	✓	–	✓	✓	✓
Focal neurology	✓	✓	–	✓	–	✓
Non-focal neurology (e.g. cognitive impairment)	✓	–	✓	✓	–	–
Change in headache characteristics—progressive (including atypical aura)	✓	✓	✓	✓	✓	✓
Change with posture	✓	–	✓	–	✓	–
Headache that wakes up	✓	–	–	✓	–	✓
Headache on awakening	–	–	–	–	–	–
Precipitated by physical exertion	✓	–	–	–	–	–
Exacerbated by physical exertion	–	–	–	✓	–	–
Precipitated by Valsalva	✓	–	–	–	–	–
Exacerbated by Valsalva	–	–	–	✓	–	✓
Risk factors for cerebral venous thrombosis	✓	–	–	–	–	–
New headache with human immunodeficiency virus	✓	✓	–	–	✓	–
New headache with cancer elsewhere	✓	–	✓	✓	✓	–
Pulse synchronous tinnitus	–	–	–	–	–	–
Headache with nausea/vomiting	–	–	–	✓	✓	✓

Clinical patterns of headache
"Emergency" Red Flags"

- Thunderclap Headache (TCH)
- "Acute" Headache PLUS*
- "Progressive (Worsening)" Headache PLUS*

PLUS* Equates to:

- persisting focal neurological signs
- +/or ↓ed GCS or altered mental state-behaviour
- Fever
- Seizures

Open Access CT & MRI & the GP in Headache assessment?

Pros:

- Earlier identification of Brain tumours?
- Less referral to Secondary care?
- Shorter waiting times?
- Better long term outcome for patients? Or is it?
- Happier Primary care - more confidence that less likely to be "sinister cause"

Cons:

What is the question being asked?

Does normal plain CT/MRI reliably exclude potentially serious headache disorders?

Longer term cost effectiveness of Open access CT/MRI in the management of Headache disorders?

Does Open access CT/MRI have any disadvantages?

Recent studies on Open Access Brain Imaging For Headache disorders

Primary care access to computed tomography for chronic headache

British Journal of General Practice, *June 2010*

Ralph Thomas, Alan Cook, Gavin Main, Tom Taylor, Elizabeth Galizia Caruana and Robert Swingler

- **12 month Prospective Primary care CT open Access study**
  - Patients –Normal exam & "unchanging & non-acute CDH"
  - No minimum duration of headache !
  - 18,702 Headache consultations in primary care over 12 months
  - 232 patients referred for Brain CT (age 20-80 years)
  - GP referral rate = 1.24% of patients seen with headache
    - 51 per 100,000 population per year
  - 1.4% abnormality rate
    - 3 "lesions" - (1 meningioma, 1 AVM, 1 metastasis)
  - 10.2% Incidentaloma rate

Primary care access to computed tomography for chronic headache

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Referral Outcome:

- 14% (30 patients) were referred onto Neurology
  - 40% at time of or before CT
  - 60% after the CT had occurred !!
  - CT induced a referral in 5% of cases - not made clear why?
  - Possibly prevented a referral in 86% of patients in 1.3 years follow-up
  - Considered "Cost effective"
- No data on patient clinical outcomes - or subsequent health utility costs?

Impact of GP direct-access computerised tomography for the investigation of chronic daily headache

Graeme C Simpson, Kirsten Forbes, Evelyn Teasdale, Alok Tyagi and Celestine Santosh

British Journal of General Practice, *December 2010*

- Glasgow – GP direct access CT for "Chronic headache"
  - 1999-2007 - 8 year study period: Mean age 43.6 yrs (11.5-99.5)
  - 4404 unenhanced CT scans +/- contrast
  - **Indications for request not clear !**
    - 10.5% (461) had abnormal findings reported i.e. "1 in 10"
    - 1.6% (60) possibly clinically relevant to headache
    - No robust data on outcome of patients ! Did their headache get better !
      - 22 tumours (0.5%)
        - 1 Glioma; 3 brain metastases: 14 Meningiomas, 4 pituitary tumours
      - 12 Chiari 1 malformations (0.4%) – none had surgery !
      - 12 Arachnoid Cysts (0.2%) -
      - 5 Anneuryms (0.1%) – only 2 treated ! ; 1 AVM – not treated
    - 9.1% Incidentaloma rate (401 scans)

Impact of GP direct-access computerised tomography for the investigation of chronic daily headache

Graeme C Simpson, Kirsten Forbes, Evelyn Teasdale, Alok Tyagi and Celestine Santosh

British Journal of General Practice, December 2010

- 47% of GPs preferred direct access CT as 1st line management for CDH rather than get an opinion (20-30% response rate)
- Less than 1% of GPs did not understand the report.
- 86% did not seek further help
- Local Headache clinic had a Neuro-imaging referral rate of 29%
- **However:**
  - No data on patient outcome or Reassurance!
  - No date on "Incidentaloma morbidity"
  - No date on future referral to specialist care
  - Only data cost savings and "Dr happiness" not patients !!

Table 2. Selected abnormalities on direct-access CT in patients with chronic headache that were likely to be incidental to the presenting symptoms.

Abnormality	*n*	Rate, %
Small vessel disease	98	2.2
Generalised atrophy	67	1.5
Established infarct	48	1
Lacunar infarct	19	0.4
Focal atrophy	16	0.3
Abnormal calcification	15	0.3
Tonsillar ectopia	12	0.2
Demyelination	10	0.2
Paranasal sinus thickening	9	0.18
Ventricular asymmetry	8	0.16
Cerebellar atrophy	8	0.16
Pineal cyst	4	0.08
Small ventricles	4	0.08
Frontal atrophy	3	0.06
Cavernous angioma	2	0.04
Small chronic subdural haematoma	2	0.04
Giant cisterna magna	2	0.04
Dandy Walker variant	1	0.02
Grey matter heterotopia	1	0.02

VOMIT and CT vs. MRI in Headache assessment

Table 3. Comparison of selected abnormalities with the rates found in an asymptomatic population study.

Abnormality	Simpson et al., 2010 Current study CT in chronic daily headache (*n* = 4 404), %	Morris *et al*[1] MRI in asymptomatic population (*n* = 19 559), %
Tumour	0.5	0.7
Chiari 1	0.4	0.24
Arachnoid Cyst	0.2	0.5
Aneurysm	0.1	0.35
Cavernoma	0.04	0.16
Colloid Cyst	0.04	0.04
AVM	0.02	0.05

AVM = Arteriovenous malformation

Higher rate of imaging abnormalities in Asymptomatic persons on MRI

04 **DIRECT ACCESS TO BRAIN MR IMAGING FOR HEADACHE IN PRIMARY CARE; BETTER THAN AN ASPIRIN?**

doi:10.1136/jnnp.2010.235572.4

A Wills. *Nottingham University Hospitals, Nottingham, UK*

Cost effectiveness of Open Access CT/MR in Primary care in an English district: The Nottingham experience !

Audit of a PCT demand management programme for Headache referrals to secondary care Neurology department (2009-2010)

Aims: Predicted Health cost saving of £50,000
Intervention: Open Access MRI with GP referral guidelines
Data: 169 scans in 12 months ; 25% of requests for Migraine
Incidentaloma rate: 3% (Meningioma, Stoke, Annerysm) & UBOs

Outcome: 20% still referred to neurology for an opinion within 6 months

Costs: £73,000 (scan costs) + subsequent £7,000 Referral costs
Minor reduction in referral numbers only !

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Focal neurology	✓	✓	–	✓	–	✓
Non-focal neurology (e.g. cognitive impairment)	✓	–	✓	✓	–	–
Change in headache characteristics—progressive (including atypical aura)	✓	✓	✓	✓	✓	✓
Change with posture	✓	–	✓	–	✓	–
Headache that wakes up	✓	–	–	✓	–	✓
Headache on awakening	–	–	–	–	–	–
Precipitated by physical exertion	✓	–	–	–	–	–
Exacerbated by physical exertion	–	–	–	✓	–	–
Precipitated by Valsalva	✓	–	–	–	–	–
Exacerbated by Valsalva	–	–	–	✓	–	✓
Risk factors for cerebral venous thrombosis	✓	–	–	–	–	–
New headache with human immunodeficiency virus	✓	✓	–	–	✓	–
New headache with cancer elsewhere	✓	–	✓	✓	✓	–
Pulse synchronous tinnitus	–	–	–	–	–	–
Headache with nausea/vomiting	–	–	–	✓	✓	✓

What happens if you use Guidelines ?

Why do GPs with a special interest in headache investigate headache presentations with neuroradiology and what do they find?

Steven Elliot · David Kernick

J Headache Pain (2011) 12:625–628

- 14 GPwSIs – 3 months – 895 consecitive patients
  - 30% (270) imaged: Range → 12-60% of cases
    - 59% with MRI
    - 41% with CT
  - 47% investigated outside "guidance" framework – BASH
  - Commonest Reason for Imaging = Reassurance
    - 41.7% (65)
  - 5.6% "Positive findings on scan"
  - 1.9% (n = 5) considered clinically significant
  - 3.7% ("incidentaloma" rate – 10 patients; 2 anneuryms !)

Table 2 Reason for investigation and findings (In some cases 2 or more reasons were listed) within the framework of BASH guidance for GPs when brain tumour is suspected

Indication for investigation within BASH guidance for GPs	Number of indications for investigation (%)	Number of positive findings for each indication (%)	Positive findings
1. Papilledema	1 (0.3%)	1 (100%)	Idiopathic intracranial hypertension
2. Significant alterations in memory, confusion or co-ordination	4 (1.2%)	0	
3. New epileptic seizures	2 (0.6%)	0	
4. New onset cluster headache	7 (2.1%)	0	
5. Headache with a history of cancer elsewhere	11 (3.3%)	0	
6. Headache with abnormal neurological signs or relevant symptoms	29 (8.8%)	0	
7. Headache aggravated by exertion or Valsalva like manoeuvre	27 (8.2%)	6 (22.2%)	Idiopathic intracranial hypertension, subdural, chiari (x3), orbital abnormality
8. Headache associated with vomiting	4 (1.2%)	1 (25.0%)	Sinus thickening
9. Headaches that change significantly	32 (9.7%)	2 (6.3%)	Lesion temporal lobe, aneurysm
10. New headache in a patient over 50 years	43 (13.1)	0	
11. Headache that wake from sleep	11 (3.3%)	0	
12. Confusion	2 (0.6%)	0	
13. Other reason outside of guidance (See Table 3)	156 (47.4%)	6 (3.8%)	(See Table 3)

Table 3 Reason for investigation outside of guidance framework and findings

Reason for investigation outside of BASH guidance for GPs	Number investigated (%)	Positive findings
Reassurance	65 (41.7%)	0
Atypical headache	21 (13.5%)	0
Prolonged or complex aura	14 (9.0%)	0
Headache on exertion	7 (4.5%)	0
Orgasmic headache	1 (0.6%)	0
Unilateral tinnitus	5 (3.2%)	0
Cough/valsalva induced headache	6 (3.8%)	0
Thunderclap headache	4 (2.7%)	0
New daily persistent headache	10 (6.4%)	0
Other (not stated)	23 (14.7%)	6 Multiple emboli, infarct [2], aneurysm, glioma, venous sinus thrombosis

Incidentaloma Rates & Onward referral rates in Open Access Brain imaging Headache studies

Study Author	Headache type	Criteria for Imaging	Brain Imaging modality	Incidentaloma rate	Onward referral Rate
Elliott & Kernick (2011)	All – unselected Sequential N = 270	BASH Guidelines	CT MRI	3.7%	?
Thomas et al. (2010)	CDH > 3 months N = 232	"Unchanging non-acute CDH" & normal exam	CT	10.2%	14%
Simpson et al. (2010)	CDH > 3 months N= 4404	Not clear/stated	CT (+/- contrast?)	9.1%	14%
Wills (2010)	Unselected -	No stated	CT & MRI	3%	20%
Morris et al. (2009)	Asymptomatic	Meta-analysis of "Screening"	MRI	2.7%	N/A

Are investigations anxiolytic or anxiogenic? A randomised controlled trial of neuroimaging to provide reassurance in chronic daily headache

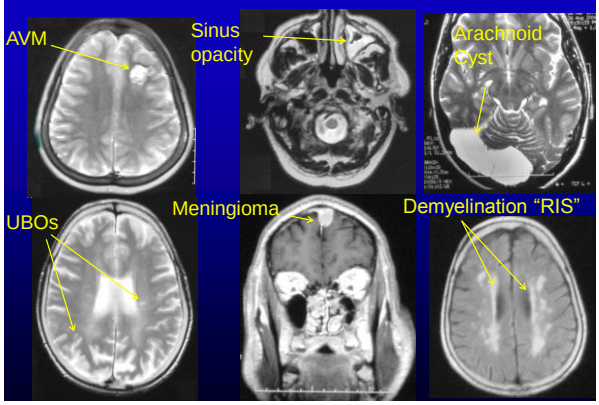
J Neurol Neurosurg Psychiatry 2005;76:1558–1564.

L Howard, S Wessely, M Leese, L Page, P McCrone, K Husain, J Tong, A Dowson

- 150 patients with non-diagnosed Chronic daily headache Randomised to low resolution Brain MRI(Sag + double echo axial)
- 74 had *MRI*
- Analysed on *Health utility costs in subsequent year and* NOT on Headache impairment related outcomes !!
- Cost saving in scan group £465 i.e. not referred to a Neurologist
- Scan offers only short term patient reassurance if they have Anxiety (HAD>11)
  - Anxiety less at 3 months, not at 1 year
- Having a scan did not improve Quality of life !! Or illness perception

VOMIT Syndrome & migraine

What problem do these patients have in common?



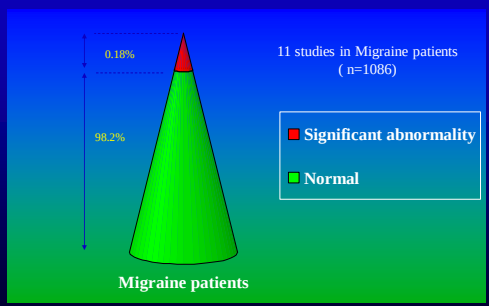
VOMIT (victims of modern imaging technology) An acronym for our times

Richard Hayward, consultant neurosurgeon,
Great Ormond Street Hospital for Children, London

BMJ (2003): 326: 1273: Personal view

- *Case 1* — A request arrives for an urgent neurosurgical consultation.
- The urgency is reinforced by several telephone calls. A 12 year old boy with headaches has had a head scan—nowadays more likely magnetic resonance imaging (MRI) than computed tomography—that shows an arachnoid cyst.
- The parents have been told that the clinical diagnosis of migraine (the scan was performed "just to be on the safe side") has been changed to something more sinister.
- The parents are terrified, their fears not at all eased by being referred to a brain surgeon.
- After all, everyone knows that when doctors talk about a "cyst" they really mean cancer.

NEUROIMAGING NON-ACUTE HEADACHE / NORMAL NEUROLOGICAL EXAMINATION



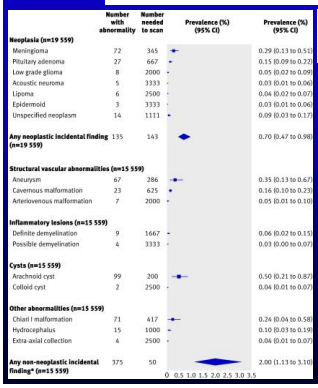
Headache Consortium Guidelines. *Neurology*. 2000.

What do we find on MRI even when we are not looking for it?

- **Nasal sinus disease**
- UBOs ("MS")
- Cerebrovascular disease
- Arachnoid cyst
- Aneurysm
- Tumour
- CSF obstruction
- AVM

Incidental findings on brain magnetic resonance imaging: systematic review and meta-analysis

: BMJ 2009;339:b3016



	Number with abnormality	Number needed to scan	Prevalence (%) (95% CI)	Prevalence (%) (95% CI)
Neoplasia (n=19 559)				
Meningioma	72	345		0.29 (0.13 to 0.51)
Pituitary adenoma	27	667		0.15 (0.09 to 0.22)
Low grade glioma	8	2000		0.05 (0.02 to 0.09)
Acoustic neuroma	5	3333		0.03 (0.01 to 0.06)
Lipoma	6	2500		0.04 (0.02 to 0.07)
Epidermoid	3	3333		0.03 (0.01 to 0.06)
Unspecified neoplasm	14	1111		0.09 (0.03 to 0.17)
Any neoplastic incidental finding (n=19 559)	135	143		0.70 (0.47 to 0.98)
Structural vascular abnormalities (n=15 559)				
Aneurysm	67	286		0.35 (0.13 to 0.67)
Cavernous malformation	23	625		0.16 (0.10 to 0.23)
Arteriovenous malformation	7	2000		0.05 (0.01 to 0.10)
Inflammatory lesions (n=15 559)				
Definite demyelination	9	1667		0.06 (0.02 to 0.15)
Possible demyelination	4	3333		0.03 (0.00 to 0.07)
Cysts (n=15 559)				
Arachnoid cyst	99	200		0.50 (0.21 to 0.87)
Colloid cyst	2	2500		0.04 (0.01 to 0.07)
Other abnormalities (n=15 559)				
Chiari I malformation	71	417		0.24 (0.04 to 0.58)
Hydrocephalus	15	1000		0.10 (0.03 to 0.19)
Extra-axial collection	4	2500		0.04 (0.01 to 0.07)
Any non-neoplastic incidental finding* (n=15 559)	375	50		2.00 (1.13 to 3.10)

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5

Zoe Morris, senior clinical fellow in neuroradiology,[1] William N Whiteley, CSO clinical academic fellow,[2] M T Longstreth Jr, professor of neurology and epidemiology,[3] Frank Weber, consultant neurologist,[4] Yi-Chung Lee, attending physician,[5] Yoshito Tsushima, associate professor of diagnostic radiology,[6] Kamrah Alphs, medical student,[1] Susanne G Lucid, consultant radiologist,[1] Charles Warlow, emeritus professor of medical neurology,[2] Joanna M Wardlaw, professor of applied neuroimaging,[1] Rustam Al-Shahi Salman, MRC clinician scientist and honorary consultant neurologist[1]

- 19,600 people; 16 studies
- Mean age 11-63 years old
- Prevalence of any incidental brain finding = 2.7%
  No. Needed to scan = 37
- Any Neoplastic finding = 0.7%
  (95% CI 0.47-0.98)
  No. Needed to scan = 143
- Any Non-Neoplastic finding = 2.0%
  (95% CI 1.1-3.1%)
  No. Needed to scan = 50
- Higher resolution scan = ↑ prevalence

"Population Epidemiology" of Common findings on MRI

- Pituitary Adenomas
  - 10% of population; symptomatic in 74-90 per 100,000
- Chiari I malformations
  - 0.1 % i.e. 1 in 1000 – Tonsillar descent > 3-5 mm
- Cerebral Anneurysms
  - 2 -4% ; Rupture rate relates to size & site
- Arterio-venous malformations (AVMs)
  - Overall All 2-18 per 100,000
    - 1 per 100,000 Brain ICM; 0.5 per 100,000 CVMs; 0.43 per 100,00 for Venous malformations; 0.16 Dural AVMS
- Arachnoid Cysts
  - 4% ; 80% Asymptomatic
- UBOs & Incidental WML or ischaemia?
  - 7%; Often asymptomatic; Increases with age

My Opinion?

Open access CT & MRI would appear useful but .....!!!

They do not often diagnose a persons headache the assessing physician does !!

The diagnosis is in the history – Most of the time !
Imaging should be focussed !!

Secondary Headache disorders when simple Brain CT/MRI can be normal !

Subarachnoid Haemorrhage

Meningoencephalitis

Cerebral Venous Sinus Thrombosis

Carotid & Vertebral Arterial dissection

Temporal Arteritis

Malignant Hypertension

Head Injury & CSF Hypovolaemia

Why do patients get referred for Brain imaging?

1. Diagnostic clarification & a suspected secondary headache disorder? & VOMIT syndrome.....!!
2. Explanation & Anxiety management
3. Medicolegal concerns
4. Not sure what to do next?
5. Refractory syndromes before ONS implantation
6. "I just don`t want to see headache patients !"
7. The SIGN or NICE Guidelines suggest I should .....
8. The patient & their relatives insisted I did ??

Brain Imaging and the clinical question? What imaging modality do you request?

- What question are you asking?
  Atypical primary headache?
  Suspected CVST ?
  Orthostatic Headache?
  Triggered Headache?

Slice thickness & Sequence?

"Excludogram?"

Which Brain imaging investigation?

Examples of disorder specific requests for multi-modality imaging

- MRI - Posterior Fossa Pathology
  - Trigeminal Autonomic Cephalalgias (TACs)
  - TN / SUNCT sequences
  - Painful 3rd nerve palsy

+/- Contrast - Intracranial Hypotension (CSF hypovolaemia)
- Cough Headache

- MRV or CTV - Immediate Post-partum Headache
  - Papilloedema & normal CT
  - New Daily Persistant Headache?

- MRA or CTA - Acute Arterial Dissection
  - Painful 3rd nerve palsy (Periorbital pain)
  - Recurrent Thunderclap headache

When to Refer patients with Headache A personal view?

- Same day Referral
  - Acute TCH – i.e. Onset <1-5mins
  - Acute HA + focal signs +/- seizures
  - Progressive HA + Fever + drowsiness
  - Progressive HA & Papilloedema
- Urgent-or Semi-urgent Referral:
  - Reliably Triggered Headache e.g. Valsalva, Cough
  - Headaches with non emergency Red flag symptoms
  - Cluster headache or TACs
  - Treatment unresponsive Trigeminal Neuralgia
  - Headache, Papilloedema & Normal CT,CTV or MRV
  - Orthostatic New Daily headache

When to Refer Headache patients to Specialist (a Headache GPwSI) or Neurologist A personal view?

- Routine Referral: Categories of patient
  - If you don't know what to do next .....!
  - If the diagnosis is unclear and there is headache related disability
  - Primary care treatment refractory headaches
    - Ongoing disabling headache symptoms despite at least 2 tolerated evidence based therapies at adequate dosing/duration
  - Unusual Migraine Aura Variants e.g.
    - Motor aura / Hemiplegic migraine / Brainstem symptoms – Basilar migraine
  - Suspected 'VOMIT syndrome"
  - Refractory Chronic Migraine, Chronic cluster headache etc.*
  - Refractory Analgesic MOH*

Conclusion

Take a better headache history
and remember
"Primum Non Nocere"

Think about
"SNOOP-TO"

And if there are no red flags
Make someone's happy
Sort out their headache rather than simply sort out their scan

5th Keele Residential Headache Teaching Course

KEELE UNIVERSITY MEDICAL SCHOOL

University of Keele
North Staffordshire

June 15th-17th 2012

BASH BRITISH ASSOCIATION FOR THE STUDY OF HEADACHE
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