Headache

- What sort of headache? What is the diagnosis?

- Primary or secondary headache? Could there be a serious underlying cause for the headache?

- Management and treatment
How migraine stacks up against other common diseases – prevalence in %
“IF WOMEN ARE SO BLOODY PERFECT AT MULTITASKING, HOW COME THEY CAN’T HAVE SEX AND A HEADACHE AT THE SAME TIME?”

Billy Connolly
Secondary headache

- Infection – meningitis, sinusitis
- Inflammatory – giant cell arteritis, SLE
- Intracranial pathology – tumour, SAH, subdural, avm
- Medication – MOH, alcohol induced, caffeine, opioid, estrogen withdrawal
- Musculoskeletal – TMJ, cervical myofascial or joint dysfunction
- Neuralgia – post herpetic neuralgia, trigeminal neuralgia
- Systemic illness

- HISTORY AND NEUROLOGICAL EXAMINATION
- BRAIN IMAGING
Brain imaging

- New onset headache
- Definite change in pre-existing headache
- Focal neurological findings
- Thunderclap headache
- Sex headache

- CT vs MRI

Primary Headaches

- Migraine without aura
- Migraine with aura

- Tension type headache

- Trigeminal Autonomic Cephalgias (TACs)
  - Cluster headache
  - Paroxysmal hemicrania
  - SUNCT

- Other primary headaches
migraine

- Migraine without aura
  - 4 to 72 hrs duration
  - Unilateral, pulsing quality, mod to severe pain, aggravated by usual physical activity
  - At least one of:
    - nausea and/or vomiting, photophobia and phonophobia

- Migraine with aura
  - Fully reversible visual and/or sensory and/or speech sx$s but no motor weakness
  - Headache begins during the aura or follows aura within 60 mins
tension-type headache

- Bilateral location, non-pulsating quality, mild-to-moderate intensity, not aggravated by routine physical activity.

- Not nausea but can have photophobia or phonophobia.
Cluster headache (episodic or chronic)
- Intermittent, excruciating, sharp/stabbing
- Ipsilateral autonomic sign (conjunctival inj, lacrimation, nasal congestion, rhinorrhea, eyelid oedema, forehead and facial sweating, miosis or ptosis)
- 15-180 mins, up to 8/day

Paroxysmal hemicrania
- At least 20/day, 2 to 30 mins, absolute response to indomethacin

SUNCT (short-lasting, unilateral, neuralgiform headache with conjunctival injection and tearing)
- Very rare, 5 to 240 secs, up to 300/day
other primary headaches

- Primary stabbing headache
- Primary cough headache
- Primary exertional headache
- Primary headache associated with sexual activity
- Hypnic headache
- Hemicrania continua
- New daily-persistent headache
Primary stabbing headache

- Paroxysmal, very short (often less than 1 sec) pain attacks which occur as single or as repetitive pain stabs.
- Affect a circumscribed area, usually in V1
- Stabbing, mild to mod intensity
- 1 a year to 100 a day
- More common in patients with other headache disorders
- Spontaneous or triggered eg. Cold ice or drinks, ice-pick like pain
- No cranial autonomic symptoms
- Pathophysiology unknown
- Usually no treatment
- Indomethacin if very frequent 25 to 50 mg bd
- Try melatonin, nifedipine, gabapentin.
Primary cough headache

- Sudden onset and lasts one second to 30 minutes.
- Triggered by coughing or valsalva
- 11 to 50% of cases cough ha is symptomatic, most common is Arnold-Chiari type 1, other causes incl post fossa mass, craniocervical abnormalities, non-ruptured aneurysms.
- Mean age of onset 55 to 65 and men 3-5x more common than women.
- Often spontaneous remission, usually 2 months to 2 years.
- Usually no treatment, avoid coughing.
- Indomethacin 50mg bd range 25 to 200mg, mean duration of treatment 6 mths to 4 years. Alternative is acetazolamide, or topamax, LP
Primary exertional headache

- Triggered by different types of physical exercise eg weight lifting, swimming and running.
- Pulsating headache lasting 5 mins to 48 hours.
- 22 to 43% of cases are secondary – SAH, cervical artery dissection, Arnold-Chiari malformation, post fossa lesions, intracranial venous anomalies or stenoses.
- Usually in early adult years.
- Co-morbidity with primary ha associated with sexual activity in about 40% and 46% have migraine.
- Spontaneous remission is common.
- Avoid exercise or slow increase esp in heat or high altitude.
- Indomethacin or propranolol or short term prophylaxis with indomethacin 25 to 50 mg 1 hour before exercise.
Primary headache associated with sexual activity

- Not assoc with other sorts of physical activity but pts can also have exertional or cough headache. Independent to the kind of sexual practice.
- Orgasmic (3-4 x more common) or pre-orgasmic.
- Pain is bilateral, diffuse or occipital.
- Usually about 30 mins and up to 24 hours.
- Exclude secondary headache (11% of SAH occur during sexual activity)
- Mechanism of disorder is unknown.
-Usu spontaneously remit but can last days to yrs and recur.
- Men 3 to 4 x more frequent
- Spontaneously remit.
- Treatment is to stop as soon as headache starts.
- Panadol, voltaren, aspirin or nurofen ineffective, triptans can settle ha, 50-75mg indomethacin is recommended prophylactically (80% response).
Hypnic headache

- Almost every night (at least every week) a occurs headache during sleep typically at the same time each night.
- Pulsating or dull, moderate, 30 mins to 3 hours, bilateral frontotemporal or diffuse.
- No assoc autonomic symptoms.
- Usually starts over the age of 50.
- Main problem is disturbed sleep.
- Only treat if impaired quality of life
- Strong coffee or oral caffeine at bedtime, or lithium, indomethacin.
Primary thunderclap headache

- Sudden headache of maximal intensity similar to that of a ruptured aneurysm with normal imaging and CSF.
- In the acute headache phase, diffuse, segmental or multifocal vasospasms in all vessel territories without evidence of aneurysm or bleeding.
- Vasospasm is completely reversible.
- Reversible cerebral vasoconstriction syndrome.
- Usually once in a lifetime.
- Can be triggered by heat.
- Other disorders can cause sudden severe headache and need to be considered.
- No data on prevalence, women>men, mean age 45 (25-67)
- Treat acutely with paracetamol and opioids.
Hemicrania Continua

- First described in 1984
- Continuous pain with increases in severity, can have mild cranial autonomic features.
- Need to ensure no medication overuse.
- Prevalence unknown, women 1 ½ times more freq than men.
- Usually starts between age 20 and 30.
- Response to indomethacin is a diagnostic criteria.
- 25 mg tds increasing to 225mg per day.
- Single case reports of verapamil, naproxen, caffeine, lamotrigine, gabapentin, methysergide, topiramate, melatonin or steroids.
New daily persistent headache

- First described in 2004.
- Difficult to distinguish from chronic tension-type ha.
- Acute or subacute onset – within 3 days and then continuous.
- Resembles chronic t-t ha but can have migrainous features.
- Usu bilateral, mostly not pulsating, dull and mild to mod intensity.
- No preceding episodic ha with increasing frequency.
- Consider medication overuse.
- Post infectious occurrence considered.
- M=F, onset 10 to 30 or 50 to 60 yrs.
- No evidence based treatment recommendation but expert consensus agrees treatment is very difficult. Treatment choice depends on primary features.
“IF YOU HAVE A LOT OF TENSION, AND YOU GET A HEADACHE, DO WHAT IT SAYS ON THE ASPIRIN BOTTLE “TAKE TWO ASPIRIN” AND “KEEP AWAY FROM CHILDREN”
headache management

- Good working relationship with the patient
- Trial and error – rarely a simple fix!
- Manage expectations
- Diary of headache and medication use
- Regular consultations
# Headache diary – www.migraineclinic.org.uk

## the City of London Migraine Clinic

22 Charterhouse Square, London EC1M 6DX - Tel: 020 7251 3322 - Fax: 020 7490 2183 - Website: www.migraineclinic.org.uk

<table>
<thead>
<tr>
<th>Day</th>
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<th>Time Attack Starts</th>
<th>Did You Have An Attack?</th>
<th>Headache/Migraine</th>
<th>Severity Mild/Moderate/Severe</th>
<th>Feel Sick Yes/No</th>
<th>Vomit Yes/No</th>
<th>Medication Taken (Please use additional paper if necessary)</th>
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Please keep any other relevant notes on a separate sheet.
tension-type headache

Simple analgesics – paracetamol, NSAIDs, aspirin

Prevention – tricyclics, gabapentin, topamax, epilim

Management of stress and tension

Exercise

Watch for MOH
Migraine is an inherited, episodic multisystem disorder involving sensory processing/ sensitivity to internal and external stimuli.

Current thinking is that a primary neuronal dysfunction leads to a sequence of changes intra and extracranially. Blood vessels are intimately involved but vasodilatation is probably an epiphenomenon.

Genetic insights from study of familial hemiplegic migraine.

Aura in 30% of patients, neurally driven, cortical spreading depression, self propogating wave of neuronal and glial depolarisation that spreads across the cerebral cortex.
Trigeminovascular system
Acute treatment of migraine

- Triptan is the treatment of choice for migraine.
  - Contraindications include pregnancy, age, cardiac history, previous adverse effects of triptans.
  - A number of patients will respond to simple analgesics early in the course of the headache.

- If no contraindications to use of a triptan, then which might be the most suitable triptan and which route of delivery?
  - Is nausea present?
  - Oral vs subcutaneous vs nasal spray.
Acute treatment of migraine

- **RizatRIPTAN (Maxalt)** 10mg
- **SumatriPTAN** 50-100 mg
- **ZolmitriPTAN (Zomig)** 5mg intranasal spray

(recreucence, triptan-specific side effects and cardiovascular safety)

- Studies confirm early treatment produces greater efficacy (START study 2010, 62% 2 hr pain-free vs 35%).
- In non-responders to sumatriptan, rizatriptan was found to be effective (2 hr pain relief 51%, pain freedom 22%) (2010, Cephalalgia)

(cafegrot or codeine phosphate or tramadol)
acute treatment of migraine

- Paracetamol rapid 1g +\- NSAID

- paramax 2 tabs +\- NSAID
  - Naproxen sodium 550mg–825mg
  - Ibuprofen 400-1200 mg
  - Diclofenac supps or dispersible tabs 50 – 100mg

- soluble aspirin 900-1000mg

- caffeine – panadol extra, coffee, coke

- anti-emetics – maxolon, buccastem, ondansetron *
Okay, we took off our clothes, I got on top of you... How long til it starts feeling good?

I don't know but I've got a headache already!

Crazy-Jokes.com
When to add preventive treatment

- Generally a minimum of 2 to 4 disabling migraines per month.
- Evaluate other medical conditions to help in decision making regarding preventive drug eg. depression, hypertension, sleep issues, weight issues.
Preventive treatment
50% reduction in 50% of patients

- Propranolol use 10 or 40mg tabs and increase to 80mg bd
- Amitriptyline or nortriptyline 10mg to 100mg/day (occ up to 150mg)
- Topamax 75-100mg/day, maximum 200mg/day
- Epilim use 200mg tabs and increase gradually to 600 to 800mg bd
- Gabapentin use 100mg tabs beginning with 100mg od to tds and increase to 300mg tds and then to 900mg tds
- SSRIs *
Chronic Daily Headache

- Primary headache occurring on at least 15 days of the month.
- 3 to 5% of the population.
- Usually a mixture of tension-type headache and migraine.
- About 10% of this group have new daily persistent headache.
- Often complicated by head injury and medication overuse.
- Often accompanied by mood disorder.
- Increased risk of “chronification” of migraine also occurs with obesity, caffeine intake and stress. *
Medication Overuse Headache (MOH)

- Simple analgesics no more than 10-15 days/month
- Opiates or triptans no more than 8-10 days/month
- Avoid combination medications! *
Medication overuse headache

• Any analgesic can cause MOH!

• A neurobehavioural disorder.
  – Physical receptor alterations.
  – Behavioural — excessive/obsessive drug-taking, anticipatory anxiety, fear of pain.

Many use drugs to cope with life and stress, even when not valuable for pain.
Treatment of MOH

Multidimensional approach

- Discontinuation of daily medication.
- Preventive therapy to limit headache occurrence and/or severity.
- Diary. (the London Migraine Clinic Headache Diary)
- May need iv dihydroergotamine protocol as inpatient.
Websites with info for doctors and patients

www.americanheadachesociety.org

www.migraine.org.uk

www.migraine4kids.org.nz

www.headaches.org
Migraine

- Botox
- Menstrual migraine
- Pregnancy
- Complementary and alternative approaches
- Interventional treatments
- Role of brain imaging
Menstrual Migraine

- Day -2 to +3
- Migraine without aura
- Estrogen patches – poor result
- Mini-prophylaxis with NSAIDs and/or sumatriptan
- Tricycle coc pill or reduced pill-free interval or supplemental estrogen
- Stop ovulation with cerazette or depo provera.
Special areas in treatment of migraine

- **Menopause** — if go in with episodic better than CDH
- **Pregnancy**
  - Tca’s, beta-blockers
  - Paracetamol, diclofenac 25-50mg (not first trimester and not for more than 3 consecutive days), codeine

- **Complementary and alternative treatments**
  - Riboflavin (vitamin B2) 400 mg/day
  - Magnesium
  - Coenzyme Q10
  - Vitamin D
  - Iron supplements
Special areas in treatment of migraine

- **Diet**
  - Dairy free diet minimum of 3 weeks
  - Gluten free diet minimum of 3 months

- Exercise – very important!!!!

- Massage and acupuncture

- “Healing Headaches” by Jim Bartley
Impact of GP direct-access computerised tomography for the investigation of chronic daily headache.

Simpson GC et al

4404 scans on pts referred by GPs in Glasgow from 1999-2007. 10.5% reported abnormal findings; potentially causative in 1.4% of pts.

Most patients (86%) did not require specialist referral.
Acute treatment of migraine

rizatRIPTAN (maxalt) 10mg or sumatriPTAN 50-100 mg or zolmitriPTAN (zomig) 5mg intranasal spray

(recurrence, triptan-specific side effects and cardiovascular safety)

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+/− NSAID or aspirin (short acting forms)
+/- anti – nausea medication
+/- paracetamol rapid 1g or paramax

(codeine phosphate or tramadol)
Acute treatment of migraine

- Paracetamol rapid 1g +/- NSAID

- paramax 2 tabs +/- NSAID
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- caffeine – panadol extra, coffee, coke

- anti-emetics – maxolon, buccastem, ondansetron
Advances in the acute treatment of migraine

A RCT on 346 pts showed efficacy of paracetamol 1g with 52% headache relief at 2hrs vs 32% for placebo but no difference in pain freedom at 2 hrs.

Cochrane meta-analysis of 10 studies confirmed superiority of paracetamol over placebo and concluded that the addition of 10mg of metoclopramide gives equal efficacy to sumatriptan 100mg.

Cochrane meta-analysis confirmed ibuprofen is effective but patients are seldom pain-free.

PARACETAMOL IS LESS POTENT THAN ASPIRIN.

NAPROXEN AND IBUPROFEN CAN BE ALMOST AS EFFECTIVE AS SUMATRIPTAN ORAL.
When to add preventive treatment

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50% reduction in 50% of patients

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Preventive treatment

- SSRIs or SNRIs
- Sandomigran 0.5mg to 4mg, mostly at night
- Candarsartan 16mg/day
- Verapamil
- Lamotrigine
Tricyclic antidepressants and headaches: systematic review and meta-analysis. Jackson JL

37 randomised trials of tricyclics in adults with ha treated for ≥ 4 wks

Tricyclics reduced days with t-t ha and attacks of migraine cf placebo but not SSRIs.

With longer duration of treatment the effect of tcas increased with decreased intensity of headache and migraine.

Tcas useful for migraine, t-t ha and mixed headache.

Ideal dose in not clear. Duration needs to be 3-6 months.
Advances in the preventive treatment of migraine

- Topiramate is currently one of the best studied preventive drugs.
- It can be effective for migrainous vertigo even at a small dose of 50mg/day.
- Cannot stop the development of chronic daily headache but reduces overall headache days.
- Its effectiveness may be due to augmentation of the GABAa receptor, modulation of sodium channels, glutamate receptor antagonism, carbonic anhydrase protein kinase inhibition, possible serotonin activity or alteration of neuroinflammatory factors.
Advances in the treatment of migraine

- Retrospective study (Heart, 2010) of patent foramen ovale closure reported improvement (34% migraine-free and 48% improved).

- (JACC Cardiovasc intervention 2010) Outcome of PFO closure in a selected group of 40 pts with refractory migraine and anatomical and functional characteristics supposedly predisposing to ischaemic events showed improvement in all patients and and auras eliminated in 100% of pts.

- The only prospective randomised, double-blind, multicentre controlled trial (MIST) enrolled 147 pts migraine with aura, and at 6 mths no benefit shown.
Advances in the treatment of migraine

- Occipital nerve block or supraorbital nerve block in chronic migraine.
- Occipital nerve stimulation – 66 pts treated and at 3 mths 39% of pts had at least 50% reduction in monthly headache days compared to 6% in the control group with 1 min stimulation vs 0 in placebo group.

- BOTOX – efficacy in chronic migraine but
  - Gain over placebo may not be clinically relevant
  - Patients had MOH not chronic migraine
  - 40% had not tried preventive medication
Chronic Daily Headache

- Primary headache occurring on at least 15 days of the month.
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- Discontinuation of daily medication.
- Preventive therapy to limit headache occurrence and/or severity.
- Diary. (the London Migraine Clinic Headache Diary)
- May need iv dihydroergotamine protocol as inpatient.
Menstrual Migraine

- Day -2 to +3
- Migraine without aura
- Estrogen patches – poor result
- Mini-prophylaxis with NSAIDs and/or sumatriptan
- Tricycle coc pill or reduced pill-free interval or supplemental estrogen
- Stop ovulation with cerazette or depo provera.
Special areas in treatment of migraine

- **Menopause** – if go in with episodic better than CDH

- **Pregnancy**
  - Tca’s, beta-blockers
  - Paracetamol, diclofenac 25-50mg (not first trimester and not for more than 3 consecutive days), codeine

- **Complementary and alternative treatments**
  - Riboflavin (vitamin B2) 400 mg/day
  - Magnesium
  - Coenzyme Q10
  - Vitamin D
  - Iron supplements
Special areas in treatment of migraine

- Diet
  - Dairy free diet minimum of 3 weeks
  - Gluten free diet minimum of 3 months

- Exercise – very important!!!!

- Massage and acupuncture

- “Healing Headaches” by Jim Bartley
**Brain Imaging**

*Br J Gen Pract* 2010;60(581):897-901

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

Simpson GC et al

4404 scans on pts referred by GPs in Glasgow from 1999-2007. 10.5% reported abnormal findings; potentially causative in 1.4% of pts.

Most patients (86%) did not require specialist referral.
Websites with info for doctors and patients

www.americanheadachesociety.org

www.migraine.org.uk

www.migraine4kids.org.nz

www.headaches.org
Okay, we took off our clothes, I got on top of you... How long til it starts feeling good?

I don't know but I've got a headache already!

Crazy-Jokes.com
Migraine pathophysiology

- PACAP and VIP produce equal craniovascular vasodilation.
  - Vasodilation is an epiphenomenon only.

- Ergotamine causes vasoconstriction but vascular changes are not associated closely with the pain.

- 3T MRA demonstrated migraine triggered by GTN was not associated with change in vessel calibre.
  - “The vascular theory has been constricted in its evidence base”.
  - Replaced by the neurovascular theory of migraine.
Acute treatment of migraine

- rizatriptan 10mg wafer
- sumatriptan orally 50-100mg
- sumatriptan injection
- zolmitriptan nasal spray
- cafergot
- codeine phosphate or tramadol
Primary headache

- Migraine with or without aura
- Tension-type headache
- Paroxysmal autonomic cephalgias
  - Cluster headache
  - Paroxysmal hemicrania
  - SUNCT
- Other primary headaches
Over 300 illnesses cause headache as a symptom!

- Temporal arteritis
- Subarachnoid/subdural haemorrhage
- Idiopathic intracranial hypertension
- Intracranial hypotension
- Carotid/vertebral artery dissection
- Cerebral vasculitis
- Reversible cerebral vasospasm
- Meningitis
- Cerebral vein thrombosis
- Arnold chiari malformation
Migraine pathophysiology

- Activation of the trigeminovascular system – small sensory neurons that originate from the trigeminal ganglion and upper cervical dorsal roots and innervate large cerebral vessels, pial vessels, dura and large venous sinuses.

- Trigeminal nerve and upper cervical nerve roots converge on trigeminal nucleus caudalis (this accounts for the distribution of pain involving head and upper neck).

- Activation of the trigeminal ganglion also results in release of vasoactive neuropeptides (substance P, CGRP) that cause neurogenic inflammation – vasodilation and plasma protein extravasation.