MIGRAINE & OTHER HEADACHES: the role of the optometrist

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DISCLOSURE
- Funding for lectures, KOL/product feedback, research:
- Lecture content always my own
- Author of Pickwell's Binocular Vision Anomalies, editions 3-5
- I.O.O. Sales Ltd markets IFS Orthoptic Exercises, which the speaker designed, for which he receives a small royalty
- Community optometric practice in Brentwood, Essex

Role of the optometrist

introduction
classification
diagnosis
visual triggers
visual treatment
International Classification of Headache Disorders (ICHD-3, 2018)

Primary

1. Migraine
2. Tension
3. Cluster
4. Other primary headaches

Secondary (cont.)

5. Head/neck trauma
6. Vascular
7. Non-vascular intra-cranial disorder
8. Substances or their withdrawal
9. Infection
10. Disorder of homeostasis (e.g., endocrine)
11. Disorder of facial or cranial structures (incl. eye)
12. Psychiatric disorder
13. Painful lesions of cranial nerves (neuralgias) & other facial pain
14. Other

Prevalence in the real world

- Prevalence varies in different countries (Stovner et al., 2007)
- Marked difference in the two sexes (Lebedeva et al., 2016)
- Marked effect of social groups & age (Lebedeva et al., 2016)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Males (n = 1732)</th>
<th>Females (n = 1249)</th>
<th>All (n = 3141)</th>
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</thead>
<tbody>
<tr>
<td>Migraine</td>
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<tr>
<td>Migraine with aura</td>
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<td>Cluster headache</td>
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<td>Postsinusitis headache</td>
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<tr>
<td>Other primary headaches</td>
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Table 1. One-year study prevalence of headache disorders according to ICHD-3 in 10,000 men, women, and students.
Never ask a clinician about prevalence!

In a headache clinic sample of 100, no secondary headaches and most were migraine

Leone et al (1993)

In an “emergency room”, 26% were secondary headaches & the most common primary headache was migraine

Munoz-Ceron et al. (2019)

In both studies, no cases of ocular headache

BUT, optometrists over-estimate prevalence of headaches from ocular origin

<table>
<thead>
<tr>
<th>Headaches</th>
<th>Primary (91%)</th>
<th>Secondary (0%)</th>
<th>Secondary (cont.) (0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Migraine (54%)</td>
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<td>2. Tension (30%)</td>
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<td>3. Cluster (7%)</td>
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<td>4. Miscellaneous (6%)</td>
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<td>5. Head trauma</td>
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<tr>
<td>6. Vascular</td>
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<tr>
<td>7. Non-vascular intra-cranial disorder</td>
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<td>8. Substances or that withdrawal</td>
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<tr>
<td>11. Disorders of facial cranial structures (inc. eye)</td>
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<tr>
<td>12. Neuralgia &amp; deafferation</td>
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</tbody>
</table>

13. Non-classifiable (8%)

Role of the optometrist

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ICHD-3 (cont.)

6. Vascular

6.1 Ischaemic
6.2 Haemorrhage (inc. sub-arachnoid)
6.3 Vascular malformation (inc. aneurysm)
Arteritis
Hypertension

7. Non-vascular intra-cranial disorder

- Intracranial hypertension
- Intracranial hypotension
- Intracranial infection
- Intracranial inflammation, disease
- Intrathecal injections
- Intracranial neoplasm
- Other intracranial disorder

If sub-arachnoid haemorrhage:
- Very severe (thunderclap), vomiting, photophobia
- Bilateral

12 13 14 16
**Differential diagnosis: the signs**

1. Essentially, know the typical, refer the atypical
2. “first or worst” rule
3. SNOOP
   a) Systemic symptoms / signs / disease
   b) Neurological Disease
   c) Onset Sudden (thunderclap)
   d) Onset after the age of forty
   e) Pattern change to the headaches

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**International Classification of Headache Disorders (ICHD-3, 2018)**

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
<th>Secondary (cont.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Migraine</td>
<td>5. Head/neck trauma</td>
<td>10. Disorder of homeostasis (e.g., endocrine)</td>
</tr>
<tr>
<td>2. Tension</td>
<td>6. Vascular</td>
<td>11. Disorder of facial or cranial structures (inc. eye)</td>
</tr>
<tr>
<td>(Trigeminal autonomic cephalalgias)</td>
<td>8. Substances or their withdrawal</td>
<td>13. Paediatric lesions of cranial nerves (neuralgias) &amp; other facial pain</td>
</tr>
<tr>
<td>4. Other primary headaches</td>
<td>9. Infection</td>
<td>14. Other</td>
</tr>
</tbody>
</table>

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**Role of the optometrist**

- Classification
- Diagnosis
- Visual triggers
- Visual treatment

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**Migraine: should I refer them all?**

- Migraine is third most prevalent disorder in the world (GBD2010)
- Typical migraine does not need neuro-imaging (American Academy of Neurology, 1994; Detsky et al., 2006; Davies, 2018)
- If diagnosis is obvious, no need for medical investigation
  - Letter of information to GP
- If not very frequent, try analgesics first
  - See GP if not fully effective
- Instruct to use diary
  - Identify any triggers → prevention

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MIGRAINE WITHOUT AURA: at least 5 attacks which:
- last 4-72 hrs (untreated)
- have at least 2 of the following:
  - unilateral
  - pulsating
  - moderate/severe
  - aggravated by routine physical activity
- during HA at least 1 of the following
  - nausea and/or vomiting
  - photophobia and phonophobia

MIGRAINE WITH AURA: 2+ attacks with:
- fully reversible aura symptoms
  - e.g., vision, sensory, speech/language, motor, brainstem, retinal
- at least 3 of the following:
  - at least one aura symptom develops gradually over 5min+ and/or
  - two or more symptoms occur in succession
  - each symptom lasts 5-60min
  - at least one aura symptom is unilateral
  - at least one aura symptom is positive
  - aura accompanied and/or followed with 60min by HA

Role of the optometrist

Optometric correlates of migraine
- Subtle pupillary anomalies (Harle & Evans, 2004; Harle et al., 2005)
- Little evidence of visual field defects or increased risk of glaucoma (Harle & Evans, 2006a; Harle & Evans, 2005)
- Slightly higher prevalence of astigmatism and anisometropia (Harle & Evans, 2004; Harle & Evans, 2006c)
- Slightly higher prevalence of heterophoria and fixation disparity, but not usually a trigger (Harle & Evans, 2004; Harle & Evans, 2006b)
- The strongest visual correlate of migraine is pattern glare, which can be a migraine trigger (Harle & Evans, 2004; Harle et al., 2006)
Pattern glare

- High prevalence in:
  - Visual stress
  - Migraine
  - Photosensitive epilepsy
  - Autism

DO NOT VIEW THIS IF YOU HAVE EPILEPSY OR MIGRAINE

Double-masked placebo-controlled trial of Precision Tints in people with migraine

INTRODUCTION: a small double-masked placebo-controlled trial of precision tinted lenses for migraine

RESULTS: Precision Tinted lenses reduce frequency of migraines for reasons that cannot be solely attributed to a placebo

STRENGTH: “suggestive”

Wilkins, Patel, Adjamian, Evans (2002)

Harle (2007): rare for migraineurs to need PTL
Speaker’s opinion: evidence lacking, but probably extremely rare

PTL reduce cortical hyperactivation in migraine

- fMRI of 11 migraineurs & 11 non-headache controls
- Viewed visual stressful & non-stressful patterns through PTL (POT), control colour, grey
- Migraineurs & controls did not differ for non-stressful patterns
- Migraines had greater activation than controls with grey or control colours
  - Normalised with PTL

Do PTL alleviate visual triggers for migraine?

1a. Systematic review of homogenous RCTs
1b. Individual RCT with good CI
2a. Systematic review of homogenous cohort studies
2b. Individual cohort study (small)
3a. Systematic review of case control studies
3b. Individual case control study
4. Case series
5. Expert opinion

EBP is “the integration of best research evidence with clinical expertise and patient values.” (Sackett, 2000)
Why mention PTL?
Visual triggers for migraine are common
- glare (62%) (Debney, 1984)
- Sun reflections (water, beach, snow, paper, chrome)
- Bright lights
- Windows [e.g., blinds]
- Flicker (53%) (Debney, 1984)
- Sun through trees/ridings/etc
- Stroboscopes (e.g., clubbing)
- Faulty fluorescent lights & non-faulty
- Television or cinema
- Light in traffic tunnels
- Flashlights or headlights
- Patterns
- Carpets, escalators, shirts, text
- Rarely, neurologists refer particularly symptomatic pts to optoms for colorimetry

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International Classification of Headache Disorders (ICHD-3, 2018)

Tension-type headache: >10 attacks which:
- last 30 mins - 7 days
- have at least 2 of the following:
  - bilateral
  - pressing/tightening (not pulsating)
  - mild/moderate (inhibits, not prohibits, daily activities)
  - not aggravated by routine physical activity
- both of the following
  - no nausea or vomiting
  - not both photophobia & phonophobia
- frequent, infrequent, and chronic varieties

IHS (2018), ICHD-3
**International Classification of Headache Disorders (ICHD-3, 2018)**

**Primary Headaches**

1. Migraine
2. Tension
3. Cluster (Trigeminal autonomic cephalalgias)
4. Other primary headaches

**Secondary Headaches**

5. Head/neck trauma
6. Vascular
7. Non-vascular intra-cranial disorder
8. Substances or their withdrawal
9. Infection
10. Disorder of homeostasis (e.g., endocrine)
11. Disorder of facial or cranial structures (inc. eye)
12. Psychiatric disorder
13. Painful lesions of cranial nerves (neuralgias) & other facial pain
14. Other

**Secondary (cont.)**

- **Headaches**
  - 11. Disorders of facial or cranial structures
    - 11.1 Cranial bone
    - 11.2 Neck
    - 11.3 Eyes
    - 11.3.1 Acute angle-closure glaucoma
    - 11.3.2 Refractive errors
    - 11.3.3 Ocular inflammatory disorder
    - 11.4 Ears
    - 11.5 Noses & sinuses
    - 11.6 Teeth, jaws, etc.
    - 11.7 Temporomandibular joint disease
    - 11.8 Other disorders of face or cranial structures
11.3 EYES:  
11.3.2 Refractive errors
- un- or mis-corrected Rx
- absent on wakening, worse with prolonged relevant tasks
- evidence of causation
  - Temporal relation to Rx
  - Improves after Rx corrected
  - Aggravated by prolonged visual tasks
  - Improves when task discontinued

Asthenopia headache: received wisdom
- “Headache is the commonest symptom associated with eyestrain. This occurs in almost every possible variety”
- All “obscure headaches” should have eye exam before medical treatment. Rule out:
  - Environmental factors
  - Refractive error
  - Binocular vision anomaly
  - IOP, fields, discs, vessels (Duke-Elder, 1970)
- No form of headache is specific to eye-related disorders (Ball, 1982)

Does refractive error headache exist?
1a. Systematic review of homogenous RCTs
1b. Individual RCT with good CI
2a. Systematic review of homogenous cohort studies
2b. Individual cohort study
3a. Systematic review of case control studies
3b. Individual case control study
4. Case series
5. Expert opinion

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EBP is “the integration of best research evidence with clinical expertise and patient values.” (Sackett, 2000)
Headache diary

Enter every headache you experience in the table below. Impact ratings can be graded as: none, mild, severe, totally disabled.

Intensity ratings can be graded as: none, mild, moderate, severe. Tick any of the "triggers" that describe your activities before the headache. "Hormonal" refers to a woman's menstrual cycle. "Flickering" refers to flickering fluorescent lights, disco lights, or light flickering through trees. "Patterns" refers to striped patterns. When you have completed the table, if any frequent triggers become apparent then try avoiding these. If visual stimuli (flickering, patterns, reading) are triggers then precision tinted lenses may help.

At Cole Martin Tregaskis Optometrists we have a special instrument, the Intuitive Colorimeter, to test for these; please telephone for an appointment.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Impact</th>
<th>Intensity</th>
<th>Medication Taken</th>
<th>Dosage</th>
<th>Time to Relief</th>
<th>Comments</th>
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Conclusions

- Optometrists can diagnose commonplace headaches
  - Know the normal: refer the abnormal asap
- Refractive errors or binocular vision anomalies may be a trigger for headaches
- Precision tinted lenses may help some people with headaches (migraine)
  - These people usually know they have visual triggers

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A personal perspective: Dr Optometry

- In 2008 the Institute of Optometry launched a Doctor of Optometry degree in collaboration with London South Bank University
- 5 year part time professional doctorate
  - Year 1 has 13 taught days & 2 assignments
  - Year 2 has 8 taught days & 2 assignments
- Years 3-5 are supervised doctoral research
- Research most likely to be clinical, in practice
- “the ultimate qualification for UK optometrists”
"We find comfort among those who agree with us – growth among those who don't."

Frank A. Clark

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