HEADACHE in the ELDERLY

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PRIMARY SECONDARY

YOUNG
ELDERLY
SECONDARY HEADACHES

New onset of headache > age 65 in 17%
Secondary headache due to a serious condition - 15% elderly
- 1.6% < 65 yrs

Risk of headaches due to serious condition increases 10 fold > age 65

Study: new onset migraine-like headache in elderly, 5/69 (7%) had silent infarct on MRI

Possible causes:
- vascular - ischemic, haemorrhagic
- cardiac cephalalgia
- acute angle closure glaucoma
- obstructive sleep apnea
- metabolic diseases (liver, kidneys, lungs)

Risk of headaches due to serious condition increases 10 fold > age 65

Diagnosed

Migraine in elderly: lots of “not”
- not recognised
- not efficiently treated: most uses only OTC drugs
- minority consults physicians
- tend to underestimate the importance of their headache
- after 1st consultation majority does not come for check-ups
Course of migraine

- onset at any age
- in childhood girls and boys—equal frequency
- onset of menarche—prev. increases in girls
- frequency and intensity decreases with years

Prevalence of migraine

- F 11 – 25%
- M 4 - 12%
- children 2 – 4%
**INCIDENCE and PREVALENCE of MIGRAINE**

Incidence decreases in early adulthood; lower in elderly
Prevalence peak around 40s, declines after mid-life (women and men)
Migraine onset after age 50: 2-4%

<table>
<thead>
<tr>
<th>Age group</th>
<th>Migraine %</th>
<th>Probable m</th>
<th>Aura %</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>16</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>30-39</td>
<td>20 peak prevalence</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>40-49</td>
<td>16</td>
<td>14</td>
<td>20</td>
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<tr>
<td>50-59</td>
<td>13</td>
<td>13</td>
<td>25</td>
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<tr>
<td>60-69</td>
<td>7</td>
<td>9</td>
<td>31</td>
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<tr>
<td>&gt; 70</td>
<td>4</td>
<td>6</td>
<td>41</td>
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</table>

One year prevalence of M 6-11%
Dutch: prev. > 55 yrs 20% women, 5.6% men
Swedish: 60-64 yrs 9% women, 65-69 yrs 6.8%, 70-74 yrs 3.4%
French: > 80 yrs 5%
American: > 60 yrs 6.4% w; 2.1% m,

Neurology 2006;67:246-51
Cephalagia 2001;21:198-200
Neurology 2000;54:314-9

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**Migraine**

- **Premonitory**
- **Prodromal phase**
- **Aura**
- **Headache**
- **Postdromal phase**

Treating mild pain was in protocol violation.
Migraine without aura
1. 4 - 72 h
2. At least 2 of:
   - unilateral localization
   - throbbing quality
   - moderate-severe (daily activities impaired)
   - worsens with physical activity
3. At least 1 of:
   - nausea and/or vomiting
   - photosensitivity

Facts
1. Up to 41% pts has bilateral pain
2. Localization can include:
   - neck
   - nasal area
   - area of sinuses
3. 50% of time pain is not throbbing

CLINICAL CHARACTERISTICS OF HEADACHE IN ELDERLY

“transformed migraine”
change of localization, intensity, frequency, character, symptoms
CLINICAL CHARACTERISTICS OF HEADACHE IN ELDERLY

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>YOUNG %</th>
<th>ELDERLY%</th>
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<tbody>
<tr>
<td>Unilateral</td>
<td>57</td>
<td>38 (48)</td>
</tr>
<tr>
<td>Nausea</td>
<td>86</td>
<td>75</td>
</tr>
<tr>
<td>Vomiting</td>
<td>54</td>
<td>30</td>
</tr>
<tr>
<td>Photo, phonoph</td>
<td>94 (77)</td>
<td>83 (67)</td>
</tr>
<tr>
<td>Throbbing</td>
<td></td>
<td>decrease</td>
</tr>
<tr>
<td>Severe pain</td>
<td></td>
<td>decrease (24)</td>
</tr>
<tr>
<td>Need to rest</td>
<td></td>
<td>decrease</td>
</tr>
<tr>
<td>Dizziness</td>
<td></td>
<td>decrease</td>
</tr>
<tr>
<td>More mild days</td>
<td></td>
<td>Increase</td>
</tr>
<tr>
<td>Better functioning</td>
<td></td>
<td>Increase</td>
</tr>
<tr>
<td>Better response to ac.med</td>
<td></td>
<td>Increase</td>
</tr>
<tr>
<td>Aura</td>
<td></td>
<td>Paleness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dry mouth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>anorexia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>running of nose, tearing</td>
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</table>

Headache 2006;31:331-7
Headache 2006;46:1161-71

CLINICAL CHARACTERISTICS OF HEADACHE IN ELDERLY

Less typical
- no longer fulfill ICHD II criteria for M, re-categorised as PM

Headache element less frequent and less intense
- severe headaches 10 % W, 5 % M > 70 yrs

Aura remains, “late life migraine accompaniments” (Fisher)
- typical sign is gradual build-up and spread over time:
  - paracentral onset, slow progression and expansion over visual field,
  - lasting 5-60 min
  - > 2 spells occured

Aura generated by cortical spreading depression – mechanisms remain intact
Migraine pain by neurovascular inflammation - propensity declines ???
CARDIAC CEPHALALGIA (CC)

- headache (exertional) as sole presentation of acute MI
- in pts > 80 yrs MI presents atypically (toothache, throat pain, abdominal pain, back pain)
- CC: no specific pattern of clinical features, high variability of symptoms:
  - form of migraine accompanied by autonomic symps, TTH
- benign in general, usually after exertion
- cardiac enzymes, ECG can be neg

Results from convergence of heart autonomic fibers with somatic inputs originating from the head
IHS II codes CC to secondary headache, disorder of homeostasis (10.6)

Clues for dg, warrants further work-up:
1. Older age
2. No past medical history of headache
3. Exertional headache in the presence of risk factors for atherosclerosis
4. Onset of headache under stress

Am J Geriatr Cardiol 2001;10:100-1.
J Headache Pain 2009;10:3-9

COMORBIDITY IN MIGRAINE PTS
- allergies, angina, arthritis, depression, osteoporosis, epilepsy, hypotension, ulcus, irritable colon, fibromyalgia, sy chronic fatigue

Pts > 70 yrs suffer from:
- arthritis (58%)
- hypertension (45%)
- heart disease (21%)
- cancer (19%)
- diabetes (12%)
- stroke (9%)
COMORBIDITY OF MIGRAINE RELEVANT FOR ELDERLY

History of migraine is not a risk factor for stroke in elderly
Lifetime prev. of M: 8% stroke pts
8% controls
15% MI pts
Stroke – no association between M and stroke in pts >55 yrs but
1 study: MA associated with cerebrovascular incidents > 55 yrs
- M not associated with high blood pressure, increased IMT in elderly; an inverse association in women

No signif. difference regarding cardiovascular risk-factor profile after adjustment for age, gender among migraineurs and non-migraineurs; 1 study: higher cardiovascular risk profile in MA pts than in pts without migraine

Coronary heart disease – no increased risk in elderly migraineurs

COMORBIDITY OF MIGRAINE RELEVANT FOR ELDERLY

Depression - high comorbidity
- worse prognosis of migraine in depressive pts

Cognitive function
5 yrs follow up
- after adj for age, gender, education, smoking:
- pts with M or non-M headache: no cognitive decline

Even long history of M does not impair cognition

MASS: information processing speed, memory in young and elderly pts with migraine -
results: M does not influence cognitive performance, medication use has no effect on cognitive measures

Cephalalgia 2006;27:97-106
Cephalalgia 2003;33:914-20
Cephalalgia 2011;31:331-7
Headache 2001;41:399-401.
**COMORBIDITY OF MIGRAINE RELEVANT FOR ELDERLY**

**Vertigo** – dizziness common complaint in general population, increases with age (peak in 3-5th decade in W, 4th in M), - migraine-related vertigo is not spec. associated with age >60 yrs

**Epilepsy** – M present in 20% of pts with epilepsy (in 3% attacks of epi in close temporal relationship with attacks of M)

Cephalagia 2006;27:97-106
Neurology 1993;43:2476-83.

**LONG TERM PROGNOSIS OF MIGRAINE**

Favorable prognosis in most pts
2 trends: majority decrease, minor progress to CDH
Progressive decline after age 40; in menopause 2/3 improve

2 studies: migraine 12 year follow up:

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<tr>
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<th>1)</th>
<th>2)</th>
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<tbody>
<tr>
<td>1</td>
<td>29%</td>
<td>42% remission</td>
</tr>
<tr>
<td>2</td>
<td>80%</td>
<td>38% fewer attacks, milder</td>
</tr>
<tr>
<td>3</td>
<td>1.6%</td>
<td>20% developed CM</td>
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CM associated with:
- high migraine freq. at baseline
- onset younger < 20 yrs
- obesity
- obstructive sleep apnea
- co-morbid pain disorders
- depression
- medication overuse
- socioeconomic status

Headache 2009;49:1144-52
Neurology 2005;23:580-5
Neurology 2006;67:246-51
### PREVALENCE, LONG TERM PROGNOSIS OF TTH

1- year prevalence 15-75 % (30-40 %)
Modest increase in ages 30-50
Decrease > 70 yrs prevalence: 65-74: 56%
75-84 45%
75-84 26%

New onset headache in elderly:
TTH the leading cause (43-80 %); trigeminal n. 36%

TTH: 45% remission
39% frequent
16% CTTH

**Clinical characteristics:** less severe

*Curr Pain Headache Rep 2005;9:436-41*
*J Neurol Neurosug Psychiatry 2001;377-381*

### PRIMARY HEADACHE

**Cluster h:** occasionally in elderly

**Hypnic headache:** 0.1% of headache pts in tertiary care
> 50 yrs, night, bilateral, mild-moderate, 2-4 h

**Chronic daily h:** 3-4%, of these: 70% CTTH
15% CM
5% other type CDH
- among CDH 38% has medication overuse, 24% takes no drugs

**Hemicrania continua:** prevalence unknown

**New daily persistent headache:** 0.03-0.1 in population;
hypothyroidism more frequent
**DIAGNOSTICS**

**History, clinical picture**

Diagnostic problems: “aura” in elderly, without migraine in past history

- Onset of migraine?
- TIA, mass lesion, temporal arteritis ?

Migrainous symptoms > age 60 warrants diagnostic work-up

- Only when extensive work-up is unremarkable, symptoms are typical of MA, they may be called “migrainous”

**Diary**

- CT scan, MRI: rule out vascular, mass lesion
- Ultrasound: artery occlusion, dissection
- Laboratory: SE, CRP, blood gasses, GUK, liver, kidney function
- EEG: differentiation between seizure and atypical MA

**AGEING** is associated with physiological and pathological changes that alter the effects of drug treatment

- **Gastric** - decline of gastric acid secretion
  - slowing of gastric emptying
  - changes in gut wall metabolism

- **Hepatic** - 40% reduction of blood flow to liver
  - changes in liver metabolism
  - decline in liver mass

- **Renal** - decline in glomerula filtration rate
  - reduction in kidney mass

**Change in vascular control systems**

**Less studies**: in trials (acute and preventive medication) pts > 60 yrs excluded – this led to undertreatment of elderly migraine pts – many physicians are uncertain how to treat elderly - treatment options are considered to be restricted
THERAPY in elderly - factors that influence medication use

Clinical characteristics (severity, frequency, duration, disability)

Comorbid diseases and risk factors
- contraindications
- pharmacological interaction (2-3 drugs)
- exacerbate migraine: vasodilating drugs: nitrate containing drugs, nifedipine; HRT, bronchodilators, antiarrhythmics, histamine H2 rec. antagonists (ranitidine), amantadine

Overall side-effect profile
Adverse events - more likely to develop
- incidence correlates with age
- due to age-related changes: altered pharmacokinetics
- due to comorbidity, polypharmacy
- more likely to be severe
- 4-6th greatest cause of death

Practical issues (cost, availability)

THERAPY in elderly
- individual approach (preferences); caution in elderly
- explain triggers
- explain medication possibilities and realistic aims
- slow introduction of medication
- gradual increase
- adjustment of therapy depends on liver, kidney function
- more frequent control of ECG, Holter
- therapy in agreement with other physicians (cardiologist, nephrologist)
- more often check-ups - lab findings (after dose increase)
- other specialists
ACUTE THERAPY OF MIGRAINE

Use of medication:
- 12% no drug
- 46% regularly
- 42% only when interfered with activities that could not be postponed
- 30% pts > 65 yrs every day takes an analgesic

**Analgesics:**
- **paracetamol** – safest; in renal or hepatic dysfunction a dose reduction 50-75% is advisable, max/day 2 g
- **ASA** – caution – GI (risk of bleeding, gastric ulcer)
  - add proton pump inhibitor

**NSAIDs** – naproxen sodium, ibuprofen, diclofenac – consistent evidence of efficacy
- limited use due to GI AEs; interaction with anticoagulants, hypoglycaemics, antihypertensives, diuretics, digoxin
- combination of NSAIDs and SSRIs - risk of GI AEs

J Neurol Neurosurg Psychiatry 2001;70:377-381
Arch Intern Med 2010;170:1968-76
Cephalalgia 2006;27:97-106

ACUTE THERAPY OF MIGRAINE

**Triptans**
- not recommended, even in absence of cardio- or cerebrovascular risk (?)
- Triptan Cardiovascular Safety Expert Panel evaluated evidence from recent large study of triptan use in elderly pts with various risk factors – no increased risk of stroke, MI, cardiovascular death, mortality
- chest symptoms are not serious, not explained by ischemia
- periodic cardiac screening is advised

**Conclusion:** in absence of contraindications, safe to use in elderly
- pharmacokinetics of rizatriptan similar in healthy young and elderly
- zolmitriptan does not affect heart rate, induced a signif. increase in blood pressure – not of clinical concern, transient
- no need for adjustment of dose - in regard to gender
  - in case of renal dysfunction
- severe hepatic lesion - lower dose advisable

Arch Intern Med 2010;170:1968-76
Cephalalgia 2006;27:97-106
ACUTE THERAPY OF MIGRAINE

Caffeine – often in combination with analgesics - has adjuvant effects; in migraine and TTH, limit is 100 mg/day to avoid CDH

Opioids – rescue medication, other medication CI
- limited use due to sedation, cognitive side effects, nausea, vomiting, constipation, urinary retention, seizures
- increased relative risk of many safety events (and all mortality)
- elevated fracture risk

Ergotamins, DHE - not recommended
(vasoconstriction- hypertension, ischemic events)

Antiemetics – metoclopramid - adjuvant medication to NSAIDs or triptans
- prochlorperazine - as monotherapy
- risk of movement disorders, sedation, orthostatic hypotension, lower epileptogenic threshold
- domperidone - recommended for elderly (not associated with central or extrapyramidal AEs)

PROPHYLACTIC THERAPY MIGRAINE

Beta blockers – propranolol 80-240 mg, metoprolol, atenolol
- CI: asthma, glaucoma, depression, chronic obstructive pulmonary disease, diabetes, heart failure, peripheral vascular disease
- AEs: fatigue, depression, nausea, dizziness
- absolute bioavailability doubles in elderly – adjust dose

Antidepressants – tricyclic – consistent support of efficacy
- low doses, up to 10-30 mg (150 mg) at bedtime
- CI: cardiac dysrhythmia, urine retention, glaucoma, prostatism, heart disease
- higher plasma drug concentrations
- AEs: orthostatic hypotension, confusion, weight gain, drowsiness, cardiac conduction disturbances (QT interval prolongation)
- nortryptiline – less AEs, little evidence for efficacy
- SSRI, venlafaxine - good tolerability profile

Drugs Aging 2006;23:461-89.
PROPHYLACTIC THERAPY MIGRAINE

**Antiepileptics**

**Valproat** – 500-750 mg/d
- mood stabilising effect in bipolar pts
- AEs: liver function disturbances, bone marrow suppression, delirium, tremor, ataxia

**Topiramat** – 100 mg/d, slow titration
- AEs: cognitive impairment, renal stones, body weight loss, sedation, agitation, fatigue, taste perversion, peripheral paresthesias
- study in epilepsy - well tolerated
- preferred in concomitant essential tremor

**Levetiracetam** - study: 1000 mg / 6 mo, signif reduction
- dosage 2000-4500 mg/day in 2-3 doses
- AEs: somnolence, concentration, GI

**Gabapentin** – moderate efficacy, 900-1200 mg/day
- good safety profile

**Lamotrigine** -100 mg /day

**Serotonine 5-HT rec. antagonists –**

**pizotifen** - AEs: weight gain, drowsiness

**methysergide** - CI: severe atherosclerosis or hypertension, peptic ulcer, thromboflebitis, retroperitoneal fibrosis

**Ca channel antagonists –** CI: hypotension, heart failure, AV block, Parkinson’s disease

**verapamil** (CI: MAO inhibitors); in elderly associated with GI bleeds due to antiplatelet effects
- 240mg/d

**flunarizine** (CI: depression, parkinsonism)
- AEs: sedation, weight gain, abdominal pain
- 10 mg/day

**ACE inhibitors –** lisinopril, enalapril

**Angiotensin II inhibitors –** candesartan
- caution – both can cause acute renal insufficiency
**PROPHYLACTIC THERAPY MIGRAINE**

No response to conventional therapies, pts with CIs:

1. *Tanacetum parthenium* (feverfew) 50-82 mg/d  
2. Mg 300-600 mg/d  
3. *riboflavin* (vitamin B2) (25mg; 400 mg/d)  
4. Q 10 co-enzim  
5. *botulinum toxin* – well tolerated, no AEs  
6. *melatonin*

**Behavioral therapy** – relaxaton techniques  
- biofeedback

**Physical therapy** – acupuncture  
- TENS  
- massage

**Peripheral nerve blockade** – unilateral greater occipital nerve blockade  
- cluster, cervicogenic headaches

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**WHICH TREATMENT SHOULD BE USED IN ELDERLY?**

**ACUTE TREATMENT**

1st choice  
paracetamol

2nd choice  
triptans

Do not use, with caution  
NSAIDs  
ASA

**PREVENTIVE TREATMENT**

1st choice  
propranolol  
pregabalin  
topiramate  
sodium valproate

2nd choice  
Ca channel blockers

Do not use, with caution  
nortryptilin

Do not use  
amytriptiline
MOST COMMON MISTAKES

- wrong diagnosis (more than 1 headache)
- no change of lifestyle (triggers)
- initial dose too low / high
- cessation of therapy too early (at least 3 mon)
- cessation due to AEs
- not adequate way of medication appliance (per os, spray, parenteral)
- medication overuse
- use of medication that exacerbate headache
- non compliance
- unrealistic expectations from therapy