system accords as much value to the results as do the patients, their relatives, and their doctors.

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Treating migraine

Try stress reduction and simple analgesia first

More than five million people suffer from migraine in the United Kingdom,[1] and most do not consult their doctor about it. Many will have learnt about their headaches from relatives—up to 70% of sufferers have a family history of migraine.[2] Ways of dealing with attacks differ: some will ignore them, and others will take a simple analgesic and retreat to a quiet, darkened room. Some sufferers need sleep to recover.

If patients consult their general practitioner about migraine the reason for this should be sought. If it is their first headache they may be worried about a possible brain tumour. A sympathetic hearing and examination followed by reassurance about the benign origin of their headaches is usually all that is required, although some will benefit from advice on using simple analgesics. Inquiries into the psychological and social background of patients presenting with headaches should be made: more headaches or worse headaches sometimes indicate anxiety or a depressive disorder.

Little scientific evidence exists for the benefit of biofeedback, hypnotherapy, and acupuncture, but some patients prefer these to treatment with drugs. Techniques of managing stress, whatever form they take, are probably helpful. Dietary manipulation is contentious; some patients will have noticed that certain foods provoke their migraine and will have learnt to avoid them. Cheese, pickled herring, red wine, and chocolate are all believed to provoke migraine as they contain substrates for monoamine oxidase—tyramine and phenylethylamine,[3] although not all researchers share the view.[4] Some migraine sufferers, who may have a disordered carbohydrate metabolism,[5] notice that missing a meal brings on an attack, and they should take regular, small meals.

Another hypothesis links food allergy and migraine. A double blind trial of an oligo-antigenic diet found that 98% of 88 children with severe migraine recovered on such a diet,[6] and another study found that sodium cromoglycate was helpful.[7] More work is needed before exclusion diets can be recommended.[8,9]

Treatment has traditionally been divided into managing acute attacks and prophylactic treatment, but this distinction may be artificial. For treating individual headaches simple analgesics usually suffice—for example, aspirin 900 mg four hourly or paracetamol 1000 mg.[8] Proprietary compounds, usually containing either of these drugs as the main ingredient, may be more helpful in some patients. Soluble or effervescent forms may be more palatable and their absorption faster from the migrainous gut. If nausea and vomiting are a problem metoclopramide or domperidone, which have antiemetic and gastric emptying effects, should be given at the first sign of a migraine attack, preferably before the analgesic (and so should be prescribed separately). If drugs given orally fail suppositories may be used; injections are usually left for emergency management by doctors. Domperidone (30 mg) may abort attacks if given at the onset of prodromal symptoms up to 48 hours before the actual attack.[10]

Ergot has been used since 1894 for headache and its effectiveness in migraine has been accepted for many years.[11] Recently its side effects—nausea, muscle cramps, and peripheral gangrene with overdose—have made it less popular. Long term use of ergotamine may also lead to permanent headache and its withdrawal to rebound headache,[12] which usually requires admission to hospital for supervised withdrawal of the drug. Nevertheless, ergotamine remains a useful drug for a few patients with infrequent, severe attacks of migraine. As its oral absorption is poor[13] it should be given by suppository or inhalation. Not more than 12 mg ergotamine should be given in a week and it should be stopped if headaches become more frequent. Combinations of ergotamine and propranolol or methysergide should be avoided.[14]

If aspirin and paracetamol fail to control headaches nonsteroidal anti-inflammatory drugs may work. Ibuprofen 400 mg, now available without prescription, is better than paracetamol 900 mg.[15] Naproxen[16] and mefenamic acid[17] may also be considered. Naproxen may be the best treatment for menstrual migraine[18] and should be started one week before the onset of menstruation.

Pharmacological prophylaxis is generally recommended when the severity of migraine interferes with normal life—when two attacks or more occur each month or when less frequent, severe headaches are resistant to usual treatment.

Interference with school work justifies treatment in childhood.

Propranolol was the first drug shown to reduce the frequency of migraine attacks,[19] and it is effective in 60-80% of patients.[13] How it works is unknown; β blockade alone is unlikely to be responsible. Propranolol lacks intrinsic sympathetic activity,[20] a property shared with atenolol, metroprolol, and timolol[21]—β blockers cannot be used in obstructive airways disease or heart block, and their use is commonly accompanied by side effects, of which lethargy is the most prominent.

Propranolol 40 mg twice daily should be prescribed initially, increasing if necessary to 80 mg thrice daily. Long acting once daily preparations may also be used. Treatment should be given for about six months and may be followed by long lasting relief of headache. Long term or intermittent prescription may be necessary in some patients. Although treatment with a single drug is preferable because it helps compliance, the combination of propranolol and amitriptyline is effective especially when migraine is combined with tension headache.[22,23]

Pizotifen is the main alternative to propranolol,[24,25] giving improvement in 40-80% of patients,[26] and is perhaps most effective when dietary factors are present.[27] Pizotifen is an antagonist of 5-hydroxytryptamine, a transmitter affected in migraine.[13] Its main side effects are sedation and weight gain; sedation may be prevented by giving the dose (1·5 mg) at night. Tachyphylaxis may also be a problem.[27] The additional antidepressant action of pizotifen[28] may be a reason to prescribe it occasionally in preference to propranolol. Initial treatment should last for six months, with increases of dose as necessary, then it should be tailed off slowly. Sometimes headaches return frequently enough to justify resuming prophylactic treatment. Rotating prophylactic drugs should be considered in these circumstances.

Other antagonists of 5-hydroxytryptamine are also effective; methysergide compares well with pizotifen.[29] Side effects of insomnia, nausea, and peripheral vasoconstriction are a problem, but retroperitoneal fibrosis has prevented wider use of methysergide.[30] It remains, however, a useful second line drug if used in four monthly bursts with at least one month between treatments.[31]

Calcium channel blockers may well become first line drugs; flunarizine and nimodipine are as effective as pizotifen.[32-35] Their mode of action is unknown, but they may prevent cerebral vasoconstriction by their action on vascular smooth muscle.[35] Neuronal factors may also be important.[34]

Feverfew has now been convincingly shown to prevent migraine,[36] but it is not available on prescription and the quality of commercial preparations varies widely. Antidepressants such as amitriptyline may be successful (and not only for their psychotropic properties[11]), with monoamine oxidase inhibitors (such as phenelzine) being reserved for severe cases.[37] Doctors treating patients with migraine may have to try many different treatments. Most patients, however, can be helped. Rarely, patients resistant to drugs need hospital admission when migraine becomes severe, and often it is best to begin by withdrawing all treatment. Status migrainosus is possible but can usually be aborted by the use of sedation and analgesics in hospital. Steroids can be given, but their use has not been closely scrutinised.

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Correction

Monitoring resuscitation

An editorial error occurred in the editorial by Dr David V Skinner (17 June, p 1597). Among the four potential reasons for limiting treatment that were suggested by Lo and Jonsen (paragraph 2) are that the patient declines and not that the patient's health declines as published.