Spreading depression of Leão has never been convincingly demonstrated in man; it is a fully reversible process during which CBF is only moderately reduced, and recovery is complete.[8] It is, therefore, difficult to see a role for it in migraine-related stroke. Is not vasospasm and ischaemia more likely? You conclude that an understanding of humoral, vascular, and neural mechanisms should lead to a better assessment of the relative contribution to risk factors and to the development of new treatments. I agree—but why not take all possibilities into consideration?

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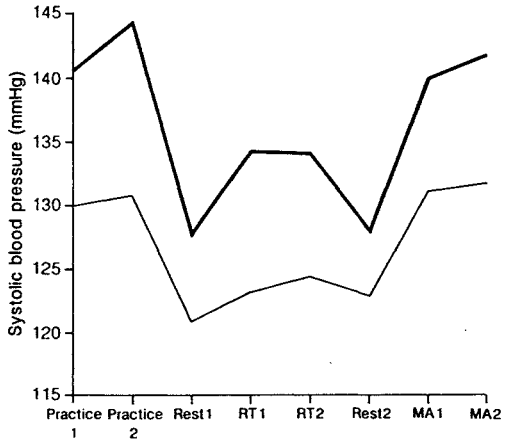
1. Skinhøj E. Hemodynamic studies within the brain during migraine. *Arch Neurol* 1973; **29**: 95–98.
2. Hachinski VC, Olesen J, Norris JW, Larsen B, Enevoldsen E, Lassen NA. Cerebral haemodynamics in migraine. *Can J Neurol Sci* 1977; **4**: 245–49.
3. Olsen TS, Friberg L, Lassen NA. Ischemia may be the primary cause of the neurological deficits in classic migraine. *Arch Neurol* 1987; **44**: 156–61.
4. Olsen TS, Lassen NA. Blood flow and vascular reactivity during attacks of classic migraine: limitations of the Xe-133 intraarterial technique. *Headache* 1989; **29**: 15–20.
5. Olesen J, Larsen B, Lauritzen M. Focal hyperemia followed by spreading migraine. *Ann Neurol* 1981; **9**: 344–52.
6. Lauritzen M, Olsen TS, Lassen NA, Paulson B. The changes of regional cerebral blood flow during the course of classical migraine attacks. *Ann Neurol* 1983; **13**: 633–41.
7. Olsen TS. Migraine with and without aura: the same disease due to cerebral vasospasm of different intensity: a hypothesis based on CBF studies during migraine. *Headache* 1990; **30**: 269–72.
8. Hansen AJ, Lauritzen M. Spreading depression of Leao. In: Olesen J, Edvinsson L, eds. Basic mechanisms of headache. Amsterdam: Elsevier, 1988: 99–107.

Alpha-1-antitrypsin and blood pressure

SIR,—Alpha-1-antitrypsin (AAT) inhibits a wide range of proteases including trypsin, thrombin, and elastase. In man, AAT is encoded by the highly polymorphic protease inhibitor (PI) locus. The M subtype alleles are most common with a combined frequency of about 0·95. The two most common deficiency alleles are S and Z, with frequencies of around 0·03 and 0·02, respectively. These alleles lead to reductions in serum AAT concentrations, and are associated with lung and liver disease.[1]

In a Dutch study of cardiovascular risk factors in 160 twin pairs (aged 14–20 years) and their parents,[2] we examined the relation between PI type and blood pressure, which was measured during both rest and tests of reaction time and speeded mental arithmetic. 44 parents of twins had at least one S or Z allele. 34 subjects were excluded because they were receiving medication that might influence blood pressure (including oral contraceptives). Among fathers (mean age 48 years), non-MM types had significantly lower systolic blood pressure (SBP) than MM types ($p = 0·008$), and there was a significant interaction between PI and the tests of reaction time and mental arithmetic ($p = 0·021$), indicating a greater reactivity of MM types to stress (figure). For diastolic blood pressure (DBP), the effect of PI type was not significant ($p = 0·069$), and there was no interaction with the tests. Differences in mothers (mean age 46 years) and twin offspring (mean age 16·7 years) were also non-significant. Since these associations could be the result of type I errors, we investigated the relation of PI type and blood pressure in an earlier study of ethanol sensitivity in Australian twins.[3] PI phenotype was available for 316 healthy subjects aged 18–34 years (mean age 23).[4] Blood pressure was taken after subjects had rested for 2 min in a supine position. The first measure was taken before alcohol intake and then at 1, 2, and 3 h after ingestion of a standard dose of alcohol. 25 males and 35 females had deficiency alleles. Once again, we found a significant difference in systolic blood pressure between MM and non-MM males ($p = 0·011$). Differences for DBP and for females were not significant.



Systolic blood pressure during rest and test conditions.

RT = reaction time; MA = mental arithmetic. ——, MM genotype; ——, non-MM genotype.

The lower SBP of 7–8 mm Hg observed in both Dutch and Australian males carrying PI deficiency alleles may help to offset some of the adverse effects of AAT deficiency. A likely mechanism is the reduced inhibition of elastase which attacks elastin in arterial walls. A further consequence of this effect is the increased risk of abdominal aortic aneurysm in PI Z carriers.[5] In addition, studies in animals have shown that elastase lowers blood pressure.[6] Since 10–20% of Europeans carry PI S or Z alleles, it is important to investigate whether PI type interacts with other environmental and genetic risk factors affecting blood pressure.

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1. Crystal RG, Brantly ML, Hubbard RC, Curiel DT, States DJ, Holmes MD. The alpha-1-antitrypsin gene and its mutations, clinical consequences and strategies for therapy. *Chest* 1989; **95**: 196–208.
2. Boomsma DI, Molenaar PCM, Orlebeke JF. Estimation of individual genetic and environmental factor scores. *Genet Epidemiol* 1990; **7**: 83–91.
3. Martin NG, Oakeshott JG, Gibson JB, Starmer GA, Perl J, Wilks AV. A twin study of psychomotor and physiological responses to an acute dose of alcohol. *Behav Genet* 1985; **15**: 305–47.
4. Gibson JB, Martin NG, Oakeshott JG, Rowell DM, Clark P. Lung function in an Australian population: contributions of polygenic factors and the Pi locus to individual differences in lung function in a sample of twins. *Ann Hum Biol* 1983; **10**: 547–56.
5. Majumder PP, St Jean PL, Ferrell FE, Webster MW, Steed DL. On the inheritance of abdominal aortic aneurysm. *Am J Hum Genet* 1991; **48**: 164–70.
6. Kato T, Kitamura H, Kanisawa M. Comparative effects of isosorbide dinitrate, prednisolone, indomethacin, and elastase on the development of monocrotaline-induced pulmonary hypertension. *Exp Mol Pathol* 1989; **50**: 303–15.

Epidemiology of scabies: the new epidemic

SIR,—In your April 27 editorial you predict a new epidemic of scabies within the next 10 years. We believe that the epidemic has already started. In the past 12 months, over 80% of our clinics in Copeland, west Cumbria, have included at least one patient with scabies. Such patients now account for about 8% of new referrals to one of our clinics in west Cumbria, and the numbers in east Cumbria are rising. These referrals include patients with undiagnosed or inadequately treated scabies, and those who have been treated but have persistent itch. This referral rate is similar to that of previous epidemics in 1944–46 and 1964–66, in which patients with scabies accounted for 10–15% of dermatology outpatient referrals.[1] As you imply, the patients seen by dermatologists are probably the tip of an iceberg in the community.

Why do we have epidemics of scabies? Failure to recognise and treat the condition promptly and effectively is clearly important, and probably results partly from the fact that many students never see a patient with scabies (only a third of the junior staff in our hospital saw this condition during undergraduate training). Proving the diagnosis by isolation of the female mite from burrows can