

Comments on Schoonman et al.: Migraine headache is not associated with cerebral or meningeal vasodilatation: a 3 T magnetic resonance angiography study (Brain 2008; 131:2192–2200)

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The recent landmark article by Schoonman et al. [1] has been interpreted by some to have provided conclusive evidence that vasodilatation does not play a part in migraine pain [2, 3]. As will be elucidated below, this is a misperception. This seminal work has indeed proven once and for all that the cerebral arteries and the extracranial portion of the middle meningeal artery are not involved in migraine pain, but it certainly does not invalidate the theory that vascular dilatation plays a role in migraine pain.

It is interesting to note that previously, experimental evidence has shown repeatedly and conclusively that there is no correlation between the pain of migraine and changes in cerebral blood flow [4–6]. These studies appear to have gone largely unnoticed or ignored. On the other hand, extracranial vascular involvement in migraine, as espoused by Wolff and his co-workers, and which was backed by hard scientific evidence [7–9] that has never been refuted, appears to have been all but obliterated from the collective consciousness of most headache experts.

Careful perusal of Schoonman et al.'s article reveals that the blood flow and diameters of two important parts of the vascular tree were not measured—the intracranial portion of the middle meningeal artery and the extracranial terminal branches of the external carotid artery.

One could infer that if the extracranial portion of the middle meningeal artery does not dilate in migraine, then it is unlikely that the intracranial portion dilates—but this is not hard scientific evidence. Until similar studies are carried out on the intracranial portion of the middle meningeal artery, however, it is not competent to proclaim on their role in migraine pain.

As Schoonman et al. also did not measure blood flow or diameter of the extracranial terminal branches of the external carotid artery, their findings can also have no bearing at all on Wolff's theories that migraine pain can originate from these vessels.

Although Schoonman et al. are to be congratulated on providing conclusive evidence to exclude the cerebral vessels from the migraine equation, the status of the intracranial portion of the middle meningeal artery and of the extracranial terminal branches of the external carotid artery in migraine remains unchanged.

References

1. Schoonman GG et al (2008) Migraine headache is not associated with cerebral or meningeal vasodilatation—a 3T magnetic resonance angiography study. *Brain* 131(Pt 8):2192–2200. doi: [10.1093/brain/awn094](https://doi.org/10.1093/brain/awn094)
2. Goadsby PJ (2009) The vascular theory of migraine—a great story wrecked by the facts. *Brain* 132(Pt 1):6–7. doi: [10.1093/brain/awn321](https://doi.org/10.1093/brain/awn321)
3. Taylor FR (2009) Abstracts and citations. *Headache* 49:148–149
4. Olesen J et al (1990) Timing and topography of cerebral blood flow, aura, and headache during migraine attacks. *Ann Neurol* 28(6):791–798. doi: [10.1002/ana.410280610](https://doi.org/10.1002/ana.410280610)
5. Olesen J et al (1982) Spreading cerebral oligemia in classical- and normal cerebral blood flow in common migraine. *Headache* 22(6):242–248. doi: [10.1111/j.1526-4610.1982.hed2206242.x](https://doi.org/10.1111/j.1526-4610.1982.hed2206242.x)
6. Sakai F, Meyer JS (1978) Regional cerebral hemodynamics during migraine and cluster headaches measured by the ^{133}Xe inhalation method. *Headache* 18(3):122–132. doi: [10.1111/j.1526-4610.1978.hed1803122.x](https://doi.org/10.1111/j.1526-4610.1978.hed1803122.x)
7. Wolff HG, Tunis MM (1952) Analysis of cranial artery pressure pulse waves in patients with vascular headache of the migraine type. *Trans Assoc Am Physicians* 65:240–244
8. Schumacher G, Wolff H (1941) Experimental studies on headache: A. Contrast of histamine headache with the headache of migraine and that associated with hypertension. B. Contrast of vascular

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- mechanisms in pre-headache and in headache phenomena of migraine. *Arch Neurol Psychiatry* 45:199–214
9. Tunis MM, Wolff HG (1953) Studies on headache; long-term observation of alterations in function of cranial arteries in subjects with vascular headache of the migraine type. *Trans Am Neurol Assoc* 3(78th Meeting):121–123