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LETTER TO THE EDITOR

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Influence of sumatriptan on the autonomic system during migraine attacks

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Recent studies on the pathophysiology of migraine provided evidence that the autonomic nervous system may contribute to the development of the headache phase [1, 2]. Although the effectiveness of the 5-HT 1B/1D receptor agonists (triptans) on pain relief is thought to be due to their specific action on the trigeminovascular system, a potential effect on the autonomic system, though unproven, may also be speculated [3]. Because of its effectiveness in investigating skin microcirculation by detecting thermic changes of a specific cutaneous area, infrared imaging may be a useful tool to test the functional effects of triptans on the autonomic system in physiological and pathophysiological conditions. The typical infrared pattern of migraine is the forehead cold patch, an asymmetrical focus of temperature decrease of 0.5°C within the external carotid territory, which represents the end result of the haemodynamic changes due to the activity of the autonomic and the trigeminovascular systems [4, 5].

In a pilot study, we tested a sample of 40 consecutive patients who met the diagnosis of migraine without aura and who reported a monthly frequency of one to six attacks. All the patients underwent clinical and infrared evaluation (PM395 Thermacam, Inframetrics, Inc., Billerica, MA) within 30 min of the onset of a spontaneous migraine attack and before treatment (t_0), and 5 (t_1), 30 (t_2) and 120 min (t_3) after treatment. Subjects were randomly assigned to receive 6 mg of injectable sumatriptan (n=30) or the same volume of placebo (n=10) within 30 min of the attack onset. Efficacy endpoint consisted of improvement in headache intensity to mild or pain-free levels (optimal response) and a complete disappearance of the asymmetric infrared pattern at t_3. Twenty-three subjects (57.5%) had an optimal response to treatment and a complete disappearance of the asymmetric pattern at infrared imaging. All these were in the subgroup of individuals who received sumatriptan. In contrast, no substantial modification of the asymmetric pattern was observed in the remaining 7 subjects (23.3%) who did not have an optimal response after treatment. The same findings were also observed in the subgroup of subjects receiving placebo: none of them had an optimal response to treatment and none showed any significant modification of the asymmetric infrared pattern.

These results demonstrate that the beneficial clinical effect of sumatriptan on pain relief is associated with the disappearance of the cold patch at the infrared investigation. As the mechanism underlying the disappear-

ance of the cold patch in migraine is presumed to be the vasodilation of the cutaneous microcirculation, our findings suggest the hypothesis of a local cutaneous vasodilation in response to sumatriptan, and indirectly prompt speculation about additional mechanisms of action of triptans apart from their known effects on the trigeminovascular system. In particular, as the autonomic nervous system plays a key role in regulating cutaneous microcirculation, it might be that triptans have also an effect on both the sympathetic and the parasympathetic systems, and that the magnitude of such an effect at the level of cutaneous vessels might be higher with respect to that on the trigeminovascular system.

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