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BRIEF REPORT

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# Migraine associated with facial ecchymoses ipsilateral to the symptomatic side

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**Abstract** The following is the case of a 55-year-old woman showing palpebral ecchymoses ipsilateral to the symptomatic side during migraine episodes. The lesions are not associated with oedema or other vegetative manifestations. A possible pathogenic mechanism hypothesised is a dermal diapedesis of erythrocytes due to neurogenic inflammation following trigeminovascular activation during migraine crises.

**Key words** Migraine • Palpebral ecchymoses

## Introduction

Some forms of primary headache, like cluster headache (CH), chronic paroxysmal hemicrania (CPH), other forms recently grouped into a new nosologic category under the acronym SUNCT (Short-lasting Unilateral Neuralgiform headache attacks with Conjunctival injection and Tearing), and hemicrania continua (HC) are all characterised by the constant association with cranial vegetative symptoms, and for this reason, some authors propose to group them into one single nosologic category called trigeminal autonomic cephalalgias (TAC) [1, 2].

On the strength of extensive clinical and experimental data, a dysfunction of the trigeminal neurovascular system and of the facial parasympathetic innervation has been suggested for these forms, involving the neuromediators, calcitonin gene-related peptide (CGRP) and vasoactive intestinal polypeptide (VIP), respectively. These substances are very powerful vasodilators, and SP also induces an increased permeability of vessels with protein extravasation [3].

Furthermore, it is well known that some patients suffering from migraine (with or without aura) also present neurovegetative phenomena, such as conjunctival injection, tearing, palpebral oedema and nasal congestion ipsilateral to the symptomatic side. The presence of these autonomic symptoms ipsilateral to the symptomatic side has been traced to the activation of the trigeminal-autonomic reflex [4].

Moreover, neurosonologic studies and dermal temperature monitoring during attacks, in patients suffering from migraine, have shown both intracranial and extracranial vasodilation [5, 6].

These data together seem to confirm the hypothesis, formulated by May and Goadsby, that migraine and other forms of primary headache, like CH, share a few pathophysiologic mechanisms at the "peripheral" level, whereas they differ at the central level, as recently demonstrated by PET studies [3].

We describe the case of a 55-year-old woman who, during headache episodes with pain localised to either side of the head, presents palpebral ecchymoses ipsilateral to the symptomatic side.

## Clinical history

No significant family history or medical history.

At age 35, the patient underwent right nephrectomy due to malformation, and at age 39, right ovariectomy due to cystic neoformation. In the past she suffered from erosive gastritis supported by EGDS. For the past few years she has been treated for hypertension, hypothyroidism, hypercholesterolaemia and hyperuricaemia. Allergic diathesis to unspecified antibiotics and certain foods (peaches and strawberries) is also reported.

For several years she has been suffering from unilateral medium intensity throbbing headaches (involving both sides), associated with photo- and phonophobia in the fronto-orbital region. Their frequency is of about three episodes per month and their duration varies from four to seventy-two hours. In the past four years, during migraine episodes, described as particularly painful and occurring with a frequency of two to three times per year, ecchymoses appeared on the upper eyelid (medial half) and at the base of the nose on the symptomatic side (Figs. 1, 2). Ecchymoses appear 12–24 hours after the onset of headache and are visible for a period varying from four to ten days; at times the ecchymosis extends to the lower eyelid, on one occasion it involved the cheekbone area, but it never affected the lateral palpebral region (towards the temple).

Neurological examination was within normal limits, with the exception of a slight postural tremor of the hands and hyperreflexia in all four limbs.

Brain MRI showed the presence of hyperintensities on T2-weighted sequences of widespread lacunar areas in the white matter of both hemispheres, at the level of the semioval centre and of the bilateral corona radiata. An angio-MRI of the cerebral and supraaortic vessels and the ECG were within normal limits.

The following laboratory tests were performed: glycaemia, complete blood cell count, PT, PTT, fibrinogenaemia, liver, kidney and thyroid function, cholesterolaemia and triglycerides, markers for hepatitis B and C, ESR, ASO, serum mucoprotein, rheumatoid factor, antinuclear antibodies, anti-DNA, anti-ENA, anticardiolipin, protein C, protein S, LAC, albuminuria and urinary kappa and lambda chains; test results were all within normal limits, with the exception of a mild hypertransaminasaemia, mixed dyslipidaemia, and a slight increase of anticardiolipin IgM antibodies. Bleeding time was also within normal limits [3–7].

The recommended therapy, consisting of a 5-month flunarizine cycle (5 mg daily) followed by two additional 20 day/month cycles for the following two months, successfully decreased the intensity and frequency of episodes (about 1–2 per month). This improvement lasted several months after the final flunarizine cycle.

A partial improvement was obtained with sumatriptan, 50 mg/os when needed. This drug was suspended by the patient due to unsatisfactory efficacy and after brain MRI had indicated widespread bilateral lacunar areas. An antiaggregating therapy was also prescribed, initially with picotamide (600 mg daily) and then with ticlopidine (500 mg daily).

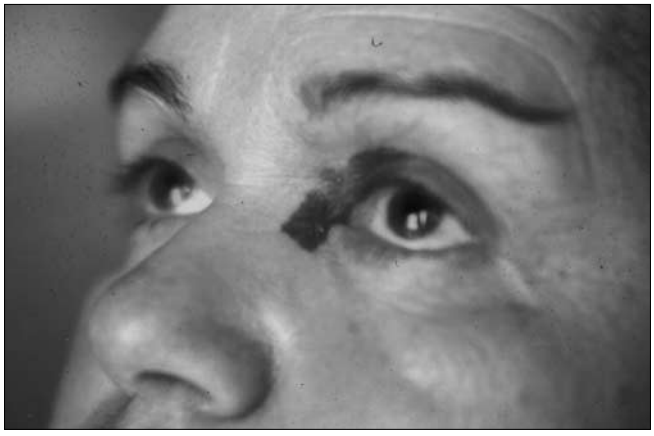

**Fig. 1** Ecchimosis on left eylid during migraine edpisode

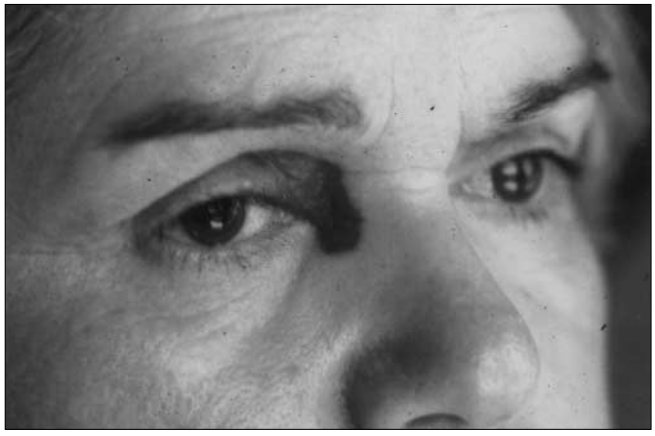

**Fig. 2** Ecchimosis on right eyelid during migraine attack, occurred 9 months after episode in Fig. 1

Neither flunarizine nor the antiaggregating therapy produced substantial variations in the frequency of headache episodes with palpebral ecchymoses, characterised by intense pain and little responsiveness to sumatriptan.

## Discussion

The literature reports a few cases of ipsilateral ecchymosis and oedema in headache episodes with and without aura, respectively: one case [7] and two cases [8] involving the periorbital region and eleven cases [9] involving the temporal and preauricular region.

Attanasio et al. recently reported the case of a 38-year-old man suffering from CH, who experienced a few migraine attacks associated with periorbital ecchymosis and oedema, involving, in some cases, also the cheek and eyeball [10].

In our patient's case, instead, ecchymoses are not associated with oedema or any other vegetative manifestation. Only one similar case was published in the past: a 58-year-old man, with hypertension and suffering from a type of headache classified under the group of headaches not associated with structural lesions, who, during attacks involving the right side of the head, experienced ecchymoses without oedema in the median frontal region and the right cheek [11].

Several hypotheses have been made to explain the occurrence of ecchymoses and oedema during migraine attacks. Most authors agree in deeming the vasomotor phenomena during the pain state to be the triggering factor and an undefined vessel fragility to be its predisposing condition. Furthermore, hypocoagulability has been documented during migraine attacks and this is probably linked to heparin released from mast cells and basophilic leukocytes [12]. The involvement of mechanical factors, such as vomiting or physical straining, as well as forceful pressure exerted on the medial canthus in an attempt to decrease the intensity of the pain, in causing the rupture of small vessels and consequently leading to blood extravasation, is not likely [13]; the fact that most ecchymoses occur during sleep, indeed, refutes this hypothesis.

We believe that the ecchymoses experienced by our patient during particularly severe headache attacks are caused by the diapedesis of erythrocytes in the dermal vessels, which are clearly more vulnerable due to vascular risk factors. The hypothesis is that the vasodilation during the pain state, especially if severe and extended over time, triggers the extravasation.

This hypothesis is supported by the presence of vascular risk factors both in our patient (hypertension and dyslipidaemia) as well as in the patient whose case is illustrated by Comabella et al. (hypertension); the brain MRIs of both patients are also nearly identical, showing lacunar areas in the semioval centres. A similar interpretation was postulated by the authors describing the case of a young woman who experienced haemorrhage of the optic disk during a migraine attack; fundoscopic examination detected bilateral hyaline bodies and an abnormal vessel tortuosity on the symptomatic side [14].

It is in the branches of the ophthalmic artery supplying blood to the facial regions that ecchymoses appear (medial palpebral branches and dorsal nasal artery in our patient's case, and lachrymal artery and sovratroclear artery in the case described by Comabella et al. [11]), and at these levels, said branches communicate with branches of the external carotid artery. The reoccurrence of ecchymoses in the same vascular districts could be ascribed to an increased intensity of vasomotor phenomena during migraine attacks, at the level of the ophthalmic artery and some of its branches.

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