CASE REPORT

Recurrent bilateral periorbital and circumoral bruising due to vomiting

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SUMMARY

Periorbital ecchymosis is due to extravasations of blood into the periorbital skin and the subcutaneous tissues around the eyes. 'raccoon eyes' or 'panda sign' is a distinctive type of periorbital ecchymosis where the bruising is characterised by tarsal sparing. This sparing is due to an anatomical structure called the orbital septum, which limits the spread of the discolouration beyond the tarsal plate. Hence 'raccoon eyes' description should be limited to orbital ecchymosis due to basal skull fractures only. While the bilateral bruising due to direct trauma to the eyes, or non-traumatic medical conditions, can spread beyond the tarsal plate as in our case. The differential diagnosis varies from trivial benign conditions to serious life-threatening illnesses. We describe a case of recurrent bilateral periorbital ecchymosis and facial bruising due to vomiting.

BACKGROUND

This is a very interesting and rare case, the first of its kind. Moreover, it will clarify the confusion between raccoon eyes which should only be used for periorbital ecchymosis due to skull fracture and periorbital ecchymosis due to other causes.

CASE PRESENTATION

A 52-year-old woman was admitted to our unit, with swollen right foot and fever, associated with pain, tenderness, redness, nausea and vomiting once. It was preceded by a scratch on the dorsum of the foot induced by intense itching. Vomiting was followed by bilateral periorbital, nasolabial and chin ecchymosis. The patient claimed that she had these bruises whenever she vomits. She had headache with no visual disturbances.

She denied any chest or urinary symptoms or trauma. Her medical history included psoriasis, hypertension and migraine. She was feverish at 39.3°C. Her pulse was 96 bpm in sinus rhythm. There was bilateral periorbital bruising with extension to the nasolabial folds and the sides of the chin (figure 1). The right eye showed subconjunctival haemorrhage. There was no proptosis.

The right foot was red, warm, swollen and tender to touch with a pustule on its dorsum associated with lymphangitis along the medial aspect of the right leg and lower part of the thigh. There were no rashes, meningeal signs or papilloedema. The rest of the examination was unremarkable.

INVESTIGATIONS

The white cell count was raised at 13.4×10^6 with a C reactive protein of 5. Her blood cultures showed

no growth. The autoimmune tests, coagulation screening, tests for amyloidosis as well as the ultrasound of the abdomen were all negative. MRI, MR angiography and MR venography revealed normal sagittal, transverse and sigmoid sinuses. No other significant abnormalities were seen.

DIFFERENTIAL DIAGNOSIS

Cerebral sinus thrombosis.

TREATMENT

The patient was treated with antibiotics and analgesic with excellent response.

DISCUSSION

Medical periorbital ecchymosis can be caused by an increase in the orbital venous pressure either due to intracranial or extracranial pathologies. It can also occur in pathological processes involving the orbital vasculature and coagulopathies.

The facial veins receive tributaries from the side of the nose and below this an important deep facial vein from the pterygoid venous plexus. It also receives the inferior palpebral, superior and inferior labial veins, the buccinators, parotid and

Figure 1 Bilateral periorbital and circumoral ecchymosis with left subconjunctival haemorrhage.

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masseteric veins and other tributaries which join it below the mandible. The facial veins are communicated to the cavernous veins via the superior and inferior ophthalmic veins which drain either separately or by a common trunk to the cavernous sinus.

Vomiting causes a transient abrupt increase in the intracranial venous pressure. This sudden venous hypertension causes a decrease in the venous return from the ophthalmic and facial venous systems which leads to venous stasis and rupture of the small tributaries with extravasations of the blood into periorbital area and the face.

Periorbital ecchymosis due to an increase in the orbital venous hypertension whether transient or prolonged has been reported in association with intracranial pathologies such as dural sinus thrombosis¹; superior sagittal sinus thrombosis²; cavernous sinus thrombosis³; idiopathic intracranial hypertension⁴; migraine due to combination of the vasodilation and the release of the vasoactive substances including heparin during acute attack^{5,6}; trigeminal autonomic cephalgia⁷ with other features such as headache, rhinorrhoea, nasal congestion, palpebral oedema, labile hypertension and behavioural abnormalities, neuroblastoma^{8,9} with metastasis involving the base of the skull has caused an obstruction of the palpebral vessels which are branches of the ophthalmic and facial vessels; or extracranial diseases such as vomiting in our case, severe cough in bronchial asthma¹⁰ will produce a valsava manoeuvre and an increase in the venous pressure, vigorous sneezing,¹¹ through the same mechanism of the cough.

Illnesses that involve orbital blood vessels can cause periorbital ecchymosis such as amyloidosis^{12,13} due to infiltration of the blood vessels by the amyloid tissue; they become fragile therefore even mild traumas including simple rubbing of the eyes or prolong downward bending of the head can cause orbital ecchymosis; giant cell arteritis¹⁴ with vasculitis of the ophthalmic vessels; Kaposi sarcoma,¹⁵ a disease of the blood vessels.

Traumatic causes of periorbital ecchymosis includes raccoon eyes sign, which is atypical of basal skull fracture^{16,17}; endoscopic sinus surgery¹⁸ due to proximity of the orbit to the nasal sinuses and inadvertent trauma during sinus surgery; periorbital trauma^{19,20} with direct injuries to periorbital vessels and thoracic trauma.²¹ A case has also been reported with severe adenovirus infection in children²² probably due to coagulopathy.

We believe that this is the first case of recurrent periorbital ecchymosis with facial bruising due solely to vomiting. However, it is prudent to exclude serious underlying intracranial pathologies by appropriate investigations. In our case although it was a recurrent phenomenon, it was essential to rule out dural thrombosis as she had sepsis from the cellulitis of the right foot.

Learning points

- Non-traumatic periorbital ecchymosis/bruising is due to sudden transient elevation of the cerebral venous pressure caused by vomiting, intense cough, etc.
- It is a benign self-limiting condition.
- It is essential to rule out any underlying cerebral pathology by appropriate brain imaging.
- Amyloidosis needs to be excluded by appropriate biochemical tests.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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