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CIRCUMORBITAL ECCHYMOSIS POST MAXILLOFACIAL TRAUMA: A LONGITUDINAL OBSERVATIONAL STUDY

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ABSTRACT

Circumorbital ecchymosis, or "raccoon eyes," is a common clinical finding following maxillofacial trauma. This study aims to understand the pathophysiology, clinical progression, and resolution of circumorbital ecchymosis in 250 patients who reported to a tertiary hospital after sustaining maxillofacial injuries.

INTRODUCTION:

Circumorbital ecchymosis is characterized by periorbital bruising resulting from blood extravasation into the soft tissues around the eyes. It is also known as racoon eyes or 'panda sign.' (Picture 1) Often associated with maxillofacial trauma, this condition can indicate underlying fractures or other significant injuries and sometimes may present 1-3 days after the injury. Understanding the pathophysiology and clinical progression of circumorbital ecchymosis is crucial for accurate diagnosis and effective management[1].

Picture 1: Circumorbital ecchymosis post maxillofacial trauma

Methodology:

The study involved 250 patients who presented with maxillofacial trauma at a tertiary care hospital. Inclusion criteria included the presence of circumorbital ecchymosis with a documented history of maxillofacial trauma. Exclusion criteria were pre-existing ocular conditions, medically compromised patients and patients on anticoagulant therapy. Data collected included sex of the patient, etiology, type of maxillofacial injury, and outcome. Patients were monitored weekly over a period of 1 month to assess the resolution and any complications of circumorbital ecchymosis.

RESULTS:

Out of 250 patients, 60% (150) were male and 40% (100) were female (Fig 1), with an age range of 18-70 years.

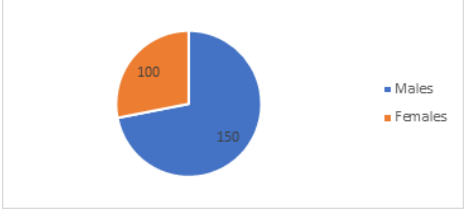

Fig 1: Sex of the patients (Total- 250)

In 190 patients the circumorbital ecchymosis was unilateral while in 60 patients it was bilateral.

The most common cause of trauma was road traffic accidents (60%), followed by falls (25%) and physical assaults (15%) (Fig 2).

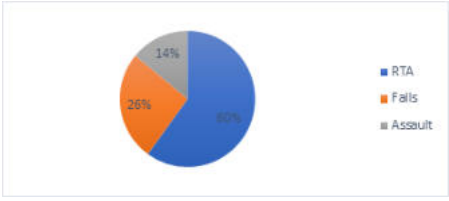

Fig 2: Etiology of trauma:

Zygomatic fractures were the most common comprising 30% cases while other injuries included le fort II or III fractures (26%), midface soft tissue injury (22%), Orbital fractures (10%), pan facial fractures (10%), and NOE Fractures (2%) (Fig 3)

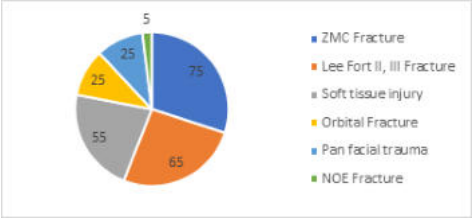

Fig 3: Type of trauma in numbers

Resolution And Presentation Of Circumorbital Ecchymosis:-

Initial Presentation: All 250 patients had visible circumorbital ecchymosis at the time of injury.
1 Week Follow-Up: 70% (175) showed partial resolution, 30% (75) had persistent ecchymosis.
2 Week Follow-Up: 16% (40) showed complete resolution, 84 (210)% had partial resolution.
3 Weeks Follow-up: 76%(190) showed complete resolution while 25%(60) had partial ecchymosis remaining
4 Weeks Follow-Up: 100% (250) had complete resolution

All the 195 patients that had fractures, underwent open reduction and internal fixation under general anaesthesia within one week of reporting to the hospital while the 55 patients that had no underlying fractures were managed conservatively.

No complications of circumorbital ecchymosis were observed in our study.

DISCUSSION:

Circumorbital ecchymosis results from the rupture of blood vessels in the periorbital region due to facial trauma. It is thought to originate from direct contusion or stretching of blood vessels and is characterized by blue or purple discoloration of the upper and lower eyelids. Blood collects in the loose connective tissue around the eyes, leading to the characteristic bruising. The rich vascular supply of the face in proximity to the eyes contributes to the rapid spread of blood to the periorbital area. Extravasation of the blood beyond the periorbital region is limited due to the orbital septum being inserted into the tarsal plate[2].

Circumorbital ecchymosis is typically associated with trauma, but has been reported in patients with amyloidosis, Kaposi's sarcoma, cervical vertebral artery lacerations, multiple myeloma, neuroblastoma, dengue fever, and clotting disorders such as essential thrombocythemia[3,4].

In our study it was observed that the majority of cases of circumorbital ecchymosis resolved within 3 weeks.

195 patients out of the 250 had facial fractures that were managed by open reduction and internal fixation under general anaesthesia. Severe maxillofacial trauma, particularly involving orbital bone, was associated with prolonged ecchymosis. This suggests that the severity and location of the injury play crucial roles in the resolution timeline in otherwise healthy patients.

Older patients tended to have longer resolution times for ecchymosis, likely due to decreased vascular elasticity and slower healing processes associated with aging.

While circumorbital ecchymosis itself is generally benign, persistent ecchymosis necessitates further investigation to rule out underlying coagulopathies or other systemic issues.

Complications such as secondary hemorrhage and infection were relatively rare but have highlighted the need for comprehensive patient evaluation.

Management of circumorbital ecchymosis involves addressing the underlying maxillofacial trauma and providing symptomatic relief. Key strategies include observation, cold compresses, and avoidance of activities that increase venous pressure. Management of fractures, ocular injuries, or other complications is essential for comprehensive care[5-7].

CONCLUSION:

Circumorbital ecchymosis is a critical clinical sign that can indicate underlying trauma, vascular injury, or systemic pathology. Early and accurate diagnosis, guided by a combination of clinical examination and imaging, is essential for appropriate management and prevention of complications. Treatment strategies should be tailored based on the underlying etiology, ranging from conservative measures for minor cases to surgical intervention in severe trauma. Further research is warranted to enhance diagnostic protocols and improve patient outcomes, particularly in distinguishing traumatic from non-traumatic causes of circumorbital ecchymosis.

REFERENCES:

1. Herbella FAM, Mudo M, Delmonti C, Braga FM, Del Grande JC. 'Raccoon eyes' (periorbital haematoma) as a sign of skull base fracture. Injury 2001;32(10):745–7.
2. Kral T, Zentner J, Vieweg U, Solymosi L, Schramm J. Diagnosis and treatment of frontobasal skull fractures. Neurosurgical Review 1997;20(1):19–23.
3. Gumus K. A child with raccoon eyes masquerading as trauma. International Ophthalmology 2007;27(6):379–81.
4. Kumar V, Ghosh B, Raina UK, Goel N. Bilateral periorbital ecchymosis in a case with dengue fever. Indian Journal of Ophthalmology 2009;57(3):242.
5. Somasundaram A, Laxton AW, Perrin RG. The clinical features of periorbital ecchymosis in a series of trauma patients. Injury 2014;45:203–5.
6. Gacto P, Montero de Espinosa I. Retrospective survey of 150 surgically treated orbital floor fractures in a trauma referral centre. Eur J Plast Surg 2009;32:23–8.
7. Jabaley ME, Lerman M, Sanders HJ. Ocular injuries in orbital fractures. A review of 119 cases. Plast Reconstr Surg 1975;56:410–8.