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Case Report
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Septal Hematoma Management in Peadiatric Patients

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Abstract

Nasal septal hematoma is a clinical condition characterized by blood accumulation within the septal space, between the cartilage and its perichondrium, most commonly occurring following trauma. Post-traumatic hematomas are generally localized more anteriorly while surgically induced hematomas occur further posteriorly. Vascular supply of the nasal septum comes from diffusion of blood from vessels located in the mucosa and mucoperichondrium, so disruption of the mucoperichondrium bilaterally may result in septal ischemia and potentially necrosis. Cartilage destruction may occur very early on after the event, within hours, and may lead to problems related to maxillary and nasal growth and development. Because of the importance of early intervention in order to prevent long term significant consequences, front-line providers including pediatricians, emergency room physicians, family practitioners, otolaryngologists, and plastic surgeons must be aware of this uncommon, but easily treatable, serious issue.

Introduction

Nasal septal hematoma is a clinical condition characterized by blood accumulation within the septal space, between the cartilage and its perichondrium, most commonly occurring following trauma [1]. This may be related to insufficient control of bleeding or too loose packing during septal surgery. Traumatic septal hematomas most commonly occur in young, male school-age children due to their tendency to play more active and rough games than their female peers [2]. Post-traumatic hematomas are generally localized more anteriorly while surgically induced hematomas occur further posteriorly [3]. Vascular supply of the nasal septum comes from diffusion of blood from vessels located in the mucosa and mucoperichondrium, so disruption of the mucoperichondrium bilaterally may result in septal ischemia and potentially necrosis [1,4]. If an organized abscess develops; destruction leading to functional structural problems may occur within days or even hours. Therefore, early diagnosis and management is crucial in order to minimize complications such as septal abscess, perforation and saddle nose deformity. In this paper we present pediatric septal hematoma cases and review the associated literature.

Case Presentation

Five cases of pediatric septal hematoma were admitted to the Emergency and Otolaryngology departments in 2013 and 2014. The age range was between 2 and 16 years. Four patients were male and one was female. All hematomas reported were caused by trauma; one case was the result of a sporting accident and the remainder was associated with falling down at home or school. Patients were admitted to the hospital between the 3rd and 8th days following the trauma. All patients presented with bilateral nasal obstruction and this complaint was getting progressively worse every day. Two patients were febrile at presentation. On physical examination all patients had obstruction in both nasal cavities; severe septal deviation on one side and soft tissue swelling on the other side. Nasal soft tissues were evaluated in all patients and fluid was aspirated with a syringe and needle, thereby diagnosing the problem in the clinic. The nature of the aspirate was bloody in 3 patients and purulent in 2 patients. Purulent fluid aspirate was observed in patients who were admitted very late to hospital (7th and 8th day following onset of symptoms). Demographic and clinical features of the patients are presented in Table 1. One of the patients (oldest patient) was drained under local anesthesia and the remaining 4 patients were drained under the general anesthesia in the operating room on the same day as they presented. On physical examination, all patients had findings of a severe septal deviation on one side, and a collection on the opposite side. The collections were drained with a Killian incision. After incision; the cavity in the septal space was aspirated and washed with antibiotic solution. There was no septal cartilage defect in any patients. After control

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Table 1: Demographic and clinical features of the patients.

Patient No	Age	Sex	Admission day	Aspirate view	Etiology	Symptoms
1	2	M	3rd day	Bloody	Falling	Nasal obstruction
2	2	M	3rd day	Bloody	Falling	Nasal obstruction
3	6	F	7th day	Purulence	Falling	Fever+Nasal Obs
4	8	M	6th day	Bloody	Falling	Nasal obs
5	16	M	8th day	Purulence	Sport accident	Fever+Nasal obs

Table 2: Complications related with septal hematoma/abscess.

Complications		
Nasal-Paranasal	**Orbital-Cranial**	**Systemic**
Nasal septal deviation, Septal Perforation, Saddle nose deformity, Facial skeleton deformity	Orbital cellulitis/ abscess Meningitis, intracranial abscess	Bacterimia, sepsis

of bleeding, septal mattress sutures and merocel packing were applied to both sides of the septum. Systemic antibiotic treatment was started with sefazolin-sodium 50 mg/kg/day. The youngest 2 patients, both 2 years old, developed severe sleep apnea during the episode. The nasal packs in these youngest patients were removed at postoperative day 2, while the rest of the packs were removed at the 3rd postoperative day. Patient fevers resolved immediately after the drainage and antibiotic treatment. After removal of the packing, the patients were discharged from the hospital on oral antibiotics. All patients and their families were informed about the septal deviations and about the need for surgical correction at a later date to address this nasal obstructive problem. The 16- year-old patient underwent septoplasty 1 year after the trauma. Septum cartilage was intact and it was fixed in the midline and the deviation was corrected without septal resection. None of the patients developed septal perforation or saddle nose deformity at one-year following the incident.

Discussion

Traumatic pediatric septal hematomas or abscesses are not very common emergency situations [5]. However, if missed, they may result in devastating cosmetic and functional problems. In cases of abscess formation, more life threading and serious complications like meningitis may occur [6]. Hematoma formation is a slow progressive process, and the patient's clinical condition may worsen day by day. Since the hematoma may be overlooked or missed during the first day following the trauma, it is recommended that a "second look" be undertaken in order to identify all cases. Children cannot express themselves sufficiently well, so if there is progressive nasal obstruction and fever following trauma, patients must be re-evaluated for suspected hematoma or abscess. It has been reported in the literature that both hematoma and abscess formation are more frequent in school-aged boys; the reason for this may be related to the more active and aggressive methods of playing among boys rather than girls in this age range. The more loose connection of the mucoperichondrium to the septal cartilage in children is the root cause of the higher rate of occurrence in the pediatric age group [7]. Despite this higher rate of occurrence, physicians should maintain a high degree of suspicion for child abuse in any pediatric case of hematoma or abscess. The most important element to diagnosing septal hematoma is to maintain a high level of suspicion. Detailed history and physical examination, followed by aspiration of the swollen and boggy mucosa is crucial, but it must be kept in mind that aspiration is not sufficient for treatment of hematoma. Radiologic imaging is not necessary for all cases, but if there is uncertainty of the diagnosis or if there is suspicion for malignancy, computer tomography with contrast enhancement is the most suitable imaging modality [5,8]. In order to prevent progression to abscess and associated complications, early diagnosis and treatment is necessary Table 2. Patients must be hospitalized and systemic antibiotic treatment should be started immediately. If the patient can tolerate it, drainage could be performed under local anesthesia in the office or emergency room, but there is a risk of insufficient drainage and significant discomfort for the patient. Therefore, it is advised that the patient be managed under general anesthesia during which a more thorough evaluation and management may be performed. All patients had severe septal deviation on one side and a fluid collection on the other side. Two patients' collections were purulent inn nature, and 3 of them were bloody in nature. Patients were diagnosed as one sided hematoma or abscess. Interestingly, even in the case of abscess formation, there was no cartilage destruction identified. The reason for this is thought to be related to the single sided collection and associated integrity of mucoperichondrium on the opposite side where there was preservation of the cartilage nutrient and blood supply. In the postoperative period both 2 years-old patients developed severe witnessed sleep apnea due to insufficiency of nasal breathing. As a result of this, the nasal packing was removed on the 2nd postoperative day. After removal of the packing, the apnea disappeared. Packing of septal hematoma patients is critical in order to prevent hematoma recurrence. There is no accepted consensus for how long the packing should remain in place. In the cases reported here, the packing was applied for 3 days in older children and 2 days in younger children. In addition, septal mattress sutures were applied to stabilize the septum and mucoperichondrium. None of the patients had a recurrence of their hematoma. Complications include infectious in the early period, and structural deformities of the nose and maxillary development due to cartilage destruction [9,10]. In this report, follow up is only 2 years and in that time, there were no complications. Longer follow up is required in order to analyze the development of the facial skeleton into adulthood.

Conclusion

Traumatic septal hematoma in children is a clinical condition which requires urgent intervention as the potential complications are devastating. Cartilage destruction may occur very early on after the event, within hours, and may lead to problems related to maxillary and nasal growth and development. Because of the importance of early intervention in order to prevent long term significant consequences, front-line providers including pediatricians, emergency room physicians, family practitioners, otolaryngologists, and plastic surgeons must be aware of this uncommon, but easily treatable, serious issue.

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