Abstract

Objectives: Identify etiologies of congenital nasal obstruction and describe clinical practice patterns in the evaluation, diagnosis, and treatment of symptomatic infants.

Methods: An electronic chart review from 1/1/2006-10/1/2016 for all patients with a diagnosis of nasal obstruction within the first six months of life using ICD-9 and 10 codes 478.19 and J34.89.

Results: A total of 35 patients were evaluated by the Division of Otolaryngology for this chief complaint. 41.18% of neonates were born premature and 35.29% were admitted to the NICU at birth, with a female-to-male ratio of 1.15:1. Presenting signs and symptoms included: stridor (25.78%), cyanosis (22.86%), retractions (20.00%), rhinorrhea (20.00%), and epistaxis (11.43%). 45.71% of patients received ancillary radiographic imaging. Diagnoses observed included: midnasal stenosis (37.14%), pyriform aperture stenosis (20.00%), choanal stenosis (11.43%), dacryocystocele (5.71%), microtia (5.71%), septal deviation (5.71%), nasopharyngeal reflux (2.86%), nasopharyngeal teratoma (2.86%), neonatal rhinitis (2.86%), and pharyngeal wall collapse (2.86%). 74.29% of patients were noted to have bilateral nasal obstruction. 40.00% of infants were found to have an associated ear, nose, and throat anomaly. 14.29% of patients required surgical intervention. The mean time-to-resolution was 240.12 days.

Conclusion: Congenital nasal obstruction has a broad differential diagnosis: the timing, onset, and laterality of symptoms can provide insights into the source of upper airway compromise. Most infants improve through conservative management (i.e. suctioning, humidification) and medical therapies (i.e. intranasal drops, nasal sprays).

Introduction

Congenital nasal anomalies are an uncommon yet potentially life-threatening cause of upper airway obstruction. As obligate nasal breathers for the first several months of life, more than 50% of infants with nasal obstruction experience desaturation2. This may lead to serious consequences in the neonate, including respiratory distress and failure to thrive. Thus, persistent nasal obstruction is an important clinical entity to recognize, diagnose, and treat. Evaluation in newborns begins with a complete history and physical examination (i.e. familial genetic disorders, prenatally diagnosed conditions, birth history). Signs and symptoms consistent with nasal obstruction may include tachypnea, nasal flaring, cyclical cyanosis, recurrent epistaxis, bilateral retractions, and episodic apnea. Physical examination should be comprised of both anterior rhinoscopy and flexible fiberoptic endoscopy to determine the source of obstruction. Multiple imaging modalities (i.e. CT and MRI) are also available in the assessment of congenital nasal obstruction. Hence, the purpose of this study is to identify etiologies of congenital nasal obstruction and describe clinical patterns in the evaluation, diagnosis, and treatment of symptomatic infants.

Materials & Methods

A database query of the electronic medical record, using ICD-9 code 478.19 and ICD-10 code J34.89, was performed on July 19, 2016 to identify all infants with a documented diagnosis of nasal obstruction from 1/1/2006-10/1/2016. Inclusion criteria were: infants <6 months of age. Exclusion criteria were: infants <6 months of age and patients with a diagnosis of choanal atresia or iatrogenic nasal obstruction. Parameters analyzed include: age, gender, birth weight, prematurity, NICU stay, feeding difficulties, signs and symptoms (i.e. apnea, cyanosis, epistaxis retractions, rhinorrhea, stertor, and stridor), laterality (unilateral vs. bilateral), associated comorbidities, syndromic disorders, diagnostic imaging, time-to-resolution, follow-up visits, medical therapies, and surgical intervention.

Results

Thirty-five patients were evaluated for this chief complaint. 77.14% of all infants presented with a stenotic nasal obstruction. 41.18% of neonates were born premature and 35.29% were admitted to the NICU at birth, with a female-to-male ratio of 1:1.50. The mean birth weight was 3110.87 grams. 44.12% of infants had feeding difficulties and 11.43% of neonates were syndromic. The mean time-to-resolution was 240.12 days, with an average of 3.18 follow-up visits. 74.28% of infants were found to have bilateral obstruction upon presentation. 45.71% of infants underwent ancillary CT or MRI imaging as part of their clinical evaluation. 14.29% of patients required surgical intervention in the setting of unreluctant symptoms.

Discussion

Congenital nasal obstruction is an uncommon yet important entity to recognize. Evaluation begins with a history and physical examination including anterior rhinoscopy and flexible fiberoptic endoscopy. If the diagnosis remains unclear, ancillary imaging can be obtained to further characterize the source of obstruction. Treatment depends on the severity of symptoms, type, and location of the lesion. The etiologies can be enumerated by categorizing these aberrations into stenotic, traumatic, inflammatory, and neoplastic classifications. The largest subgroup of the nasal stenoses, midnasal stenosis, is a rare entity secondary to bilateral overgrowth midway through the intranasal cavity, resulting from unequal growth of the lateral nasal sidewalls or excessive infolding of the nasal septum3. CT demonstrates either isolated bony narrowing along the mid-portion of the intranasal cavity or narrowing associated with stenosis of the intranasal cavity4. In this series, 13 infants were successfully medically managed, with an average time-to-resolution of 126 days.

Conclusions

Although upper airway obstruction has a broad differential diagnosis, the timing, onset, and laterality of symptoms can provide insight into the location of obstruction. In this case series, most infants had stenosis along a segment of the nasal airway and improved with the use of conservative therapies.

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References