Respiratory distress caused by bilateral nasolacrimal duct mucoceles in a neonate

Scott Hardison M.D., Christopher Leffler M.D., Kelley Dodson M.D.

1Virginia Commonwealth University, Department of Otolaryngology, Richmond, VA
2 Virginia Commonwealth University, Department of Ophthalmology, Richmond, VA

ABSTRACT

Outcome Objectives:
1) Present a case of nasal obstruction and respiratory distress secondary to bilateral nasolacrimal duct mucoceles, and
2) Discuss diagnostic and treatment modalities for bilateral nasolacrimal duct mucoceles in the neonatal period.

Methods: Case report and literature review. A two-day-old female born at 38 weeks gestation who developed respiratory distress soon after birth, more pronounced with sleeping and feeding. After choanal atresia was ruled out by insertion of a nasogastric tube, fiberoptic nasal endoscopy revealed pale cystic lesions emanating from the inferior meatus bilaterally. The airway was secured with nasopharyngeal airway adjuncts. A computed tomography (CT) scan revealed bilateral cystic lesions extending from the medial canthus through the nasolacrimal duct and down into the inferior meatus bilaterally, consistent with nasolacrimal duct mucoceles. The patient was taken to the operating room on the fourth day of life for endoscopic marsupialization of the cysts and probing of the nasolacrimal ducts.

Results: The patient’s respiratory distress resolved immediately with surgery. She was discharged home after three days. At her two-week follow-up visit, her parents reported that her respiratory symptoms had not returned. Review of literature reveals only a small number of such case reports in the literature.

Conclusion: Bilateral nasolacrimal duct cysts are a rare cause of respiratory distress in neonates, but should be considered in the differential diagnosis. Early surgical intervention with marsupialization of the cysts is favored.

INTRODUCTION

Nasolacrimal duct mucoceles, also referred to as dacryocystoceles, are commonly caused by nasolacrimal obstruction in neonates. They result from congenital stenosis of the duct. In rare cases, these lesions may be found bilaterally. As neonates are obligate nasal breathers, bilateral nasal obstruction in this population of neonates often leads to respiratory distress. We present a case of a two-day-old infant who presented with respiratory distress and feeding difficulties and was discovered to have bilateral nasolacrimal duct cysts. This represents one of only a small number of such case reports in the literature.

CASE REPORT

A two-day-old female born at 38 weeks gestation developed respiratory distress soon after birth and was admitted to the neonatal intensive care unit (NICU). Her respiratory distress was more pronounced with sleeping and feeding.

After choanal atresia was ruled out by insertion of a nasogastric tube on each side, fiberoptic nasal endoscopy by the pediatric otolaryngology service revealed pale cystic lesions emanating from the inferior meatus bilaterally with patent nasal cavities posteriorly. These bilateral obstructions were temporarily bypassed with nasopharyngeal airway adjuncts to improve his breathing while further work-up was conducted.

A computed tomography (CT) scan revealed bilateral cystic lesions extending from the medial canthus through the nasolacrimal duct and down into the inferior meatus bilaterally, consistent with nasolacrimal duct mucoceles. The patient was taken to the operating room on the fourth day of life for endoscopic marsupialization of the cysts and probing of the nasolacrimal ducts.

The patient’s respiratory distress resolved immediately with surgery and she was breathing comfortably in the operating room following extubation. She was discharged home three days later. At her two-week follow-up visit, her parents reported that her respiratory symptoms had not returned.

DISCUSSION

A nasolacrimal duct mucocele is an abnormal dilation of the nasolacrimal sac caused by obstruction above and below the sac.1 Though congenital obstruction of the duct is relatively common, affecting an estimated 20%-30% of neonates, nasolacrimal duct mucoceles are substantially more rare.2 They are thought to originate from a failure of canalization of the distal duct at the valve of Hasner during development.3 With the valve of Rosenmüller naturally acting as a one-way valve, tears and mucus become trapped within the sac, causing the contents of the nasolacrimal duct to protrude from either the inferior meatus (intrasanally), the medial canthus or both.4 These cysts more often affect females at a ratio of 5:1.4

Nasolacrimal duct cysts are most often unilateral lesions, but case reports in the literature have shown that they may also occur bilaterally.1,5-11 When bilateral, this may lead to respiratory distress with feeding and sleeping, as neonates are obligate nasal breathers.1 Indeed, one case series showed that 71% of newborns with bilateral nasolacrimal duct mucoceles experienced respiratory distress.5 This may mimic other more common conditions such as choanal atresia, with the key difference that nasogastric tubes may often be passed without difficulty.

As is the case with any neonate suspected of having nasal obstruction, nasal endoscopy should be the first diagnostic test. Most authors agree that computed tomography (CT) scanning is the next logical step, as it can better define the extent of the lesions.1,5-11 This importantly provides confirmation of the diagnosis before taking a neonate to the operating room, also allowing for better operative planning.

Treatment typically consists of marsupialization of the mucocele via a nasoendoscopic approach. This may also be done in conjunction with marsupialization of the nasolacrimal duct from above, as was the case with our patient. This provides final confirmation of the diagnosis in the operating room and allows for better definition of the mucocele capsule during marsupialization.

CONCLUSION

Bilateral nasolacrimal duct cysts often cause respiratory distress and feeding difficulties early in life and should be included in the differential with other causes of neonatal nasal obstruction. Nasal endoscopy and CT scanning are both important to diagnosis. Once identified, nasolacrimal duct cysts should be treated with a combination of endoscopic marsupialization and marsupialization of the nasolacrimal duct.

REFERENCES

6) Fishman G, Doibling S, Ben-Sira L, DeRose A. Bilateral Congenital Nasolacrimal Duct Cyst: An Unusual Cause of Respiratory Distress in the Neonate. IMAJ (2002); 4: 831-832
7) In HR, Shin SO. Endoscopic marsupialization of bilateral lacrimal sac mucoceles with nasolacrimal duct cysts. Auris Nasus Larynx (1999); 26: 441-445
8) Lacavalier M, Nguyen LHP. Bilateral dacryocystoceles as a rare cause of neonatal respiratory distress: Report of 2 cases. ENT Journal (2014); 9(1). E26
11) Taymoor A, Heise L, Werner JA, Lippert BM. Bilateral congenital dacryocystocele as a cause of respiratory distress in a newborn. Rhinology (2003); 41: 41-44

Correspondence:
Kelley Dodson M.D.
kddodson@mcvh-vcu.edu