Right-Sided Pyriform Sinus Fistula: A Case Report and Review of the Literature

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INTRODUCTION

Pyriform sinus fistulae are epithelialized tracts representing a disturbance of the embryological third or fourth branchial pouch. While these malformations present in many different ways, the vast majority are left-sided. Treatment of these sinus tracts and fistulae is also quite variable. We present a rare case of a right-sided pyriform sinus fistula demonstrated radiographically and treated with chemocauterization.

CASE PRESENTATION

Healthy 24 y/o Caucasian woman presented to PCP with odynophagia, sore throat & subjective fever → given steroid & azithromycin

- 4 days later: progressive neck swelling brought patient to emergency department
- Exam: right lateral neck with tenderness, induration, erythema
- Flexible laryngoscopy unremarkable
- CT: large cystic lesion with air & fluid extending from right larynx to thyroid
- Needle decompression of cystic mass performed
- Despite IV antibiotics, cyst reaccumulated → pigtail catheter drain placed by IR
- Fluoroscopic sinogram of pigtail catheter performed (Fig. 1) revealing connection of cyst to apex of right pyriform sinus
- 3 wks later: direct laryngoscopy & chemocauterization of fistulous tract with 40% trichloroacetic acid (TCA) (Fig. 2 – 5)
- 4 months later: repeat esophagram (Fig. 6) confirmed fistula closure

DISCUSSION

The origin of 3rd and 4th branchial fistulae is commonly believed to involve persistence of the pharyngobranchial duct, which connects the 3rd and 4th pharyngeal pouches to the pharynx and normally degenerates during the 7th week of development. Its persistence results in a sinus tract that communicates with the pyriform fossa.1,2 When present, the external opening of both 3rd and 4th pouch remnants lies in the skin overlying the anterior border of the sternomastoid muscle. Third and 4th branchial fistulae then follow quite a different proposed course from skin to pyriform fossa, however differentiating 3rd from 4th anomalies is clinically difficult.

Complete congenital 3rd and 4th branchial fistulae are rare, with most presenting as sinus tracts before becoming secondarily iatrogenic fistulae. A recurrent lateral neck abscess and suppurative thyroiditis are the most common presentations. Approximately 93-97% of 4th pouch anomalies are left sided, which may be related to the absence or involution of the ultimobranchial body on the right side, in addition to asymmetric vascular agenesis during 4th arch development.4 Treatment should be preceded by antibiotics to allow regression of associated inflammation. Surgical excision is considered definitive therapy, however it poses a risk to the recurrent laryngeal nerve in the setting of scarring and fibrosis from recurrent abscesses. Chemocauterization with 40% trichloroacetic acid (TCA) is a less invasive treatment, though may be prone to recurrence.

CONCLUSION

✓ Branchial cleft cyst and pyriform sinus fistula must be considered in the diagnosis of cervical abscess in either side of the neck, despite the rarity of right-sided lesions

✓ Ultrasound, contrast-enhanced CT, barium esophagography & direct laryngoscopy are all useful methods to visualize a potential hypopharyngeal fistulous opening

✓ Chemocauterization with trichloroacetic acid (TCA) is a safe and effective first-line treatment of pyriform sinus fistulae

✓ TCA is minimally invasive and allows for less morbidity and earlier hospital discharge when compared to surgical treatment

✓ In cases of recurrence after conservative treatment, surgery is recommended

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