# When Croup isn't Croup: A Case of Subglottic Hemangioma in an Infant

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## BACKGROUND

Infantile hemangiomas are the most common pediatric vascular tumors, comprising 4% to 10% of all such tumors. Subglottic hemangiomas, while rare, are potentially life-threatening causes of airway obstruction. Due to their nonspecific symptoms, they often mimic recurrent croup, resulting in misdiagnosis and delayed treatment.

## CASE DESCRIPTION

**Patient:**

- Full-term male neonate, birth weight 2.9 kg, uncomplicated perinatal course.

**Symptom Timeline:**

- **2 Weeks:** Noisy breathing after breastfeeding (self-resolved by 3 weeks).
- **6 Months:** Intermittent, nonproductive cough; exam normal; reassurance given.
- **8 Months:** Recurrent cough with intermittent noisy breathing; ED visit; positive for rhino/enterovirus; treated as viral croup with oral dexamethasone.
- **9 Months:** 1-day fever with a 1-week barky cough; positive for influenza A and coronavirus HKU1; dexamethasone given; normal chest X-ray.
- **10 Months:** Persistent barking cough, nasal congestion, and poor oral intake.
  - **Multiple Visits:**
    - 6 ED visits for worsening symptoms.
    - 3 PCP visits for chronic cough and poor weight gain.
- **Admission at 11 Months**
  - Presenting Symptoms:
    - Persistent barking cough and nasal congestion
    - Poor oral intake
    - Episodes of noisy breathing, exacerbated by activity
  - Physical Examination on Admission:
    - Vital Signs: Stable and within normal limits
    - Growth: Weight at 7.64 kg, tracking at the 3rd percentile for age and sex.
    - General: Alert but appearing fatigued and uncomfortable
    - Respiratory: Mild respiratory distress with nasal flaring; mild to moderate stridor, particularly with activity; no wheezing.
    - Cardiovascular: Normal heart sounds, no murmurs.

## DIAGNOSTIC WORKUP

- **Bedside nasopharyngolaryngoscopy (NPL):** significant subglottic edema
- **Chest X-ray:** No foreign body obstruction or upper airway narrowing.
- **Echocardiogram:** Two small secundum ASDs, left aortic arch with normal branching.
- **Initial telescopic laryngoscopy bronchoscopy (TLB):** Subglottic fullness (L>R), suspicious for hemangioma.

## TREATMENT AND HOSPITAL COURSE

- **Initial Management:**
  - **Procedures:**
    - Day 3: Direct laryngoscopy, tracheoscopy, and bronchoscopy (TLB) revealed subglottic fullness (left > right), concerning for a hemangioma.
  - **Propranolol:** Initiated at 1 mg/kg/dose every 8 hours following the TLB results.
  - The patient was transferred to the PICU for airway observation and hypoglycemia monitoring related to propranolol use.
  - After a stable PICU course, the patient was transferred back to the pediatric floor
- **Symptom Management:**
  - **Medications:**
    - Intravenous dexamethasone (0.5 mg/kg every 8 hours). Dexamethasone was gradually weaned after symptom stabilization.
    - Racemic epinephrine as needed for respiratory distress.
- **Follow-up & Reassessment:**
  - Day 21: The repeat TLB was performed to reassess the subglottic hemangioma, which had reduced in size with no mucosal ulceration.
- **Discharge:**
  - The patient was discharged on hospital day 22 with follow-up arrangements:
    - PCP for propranolol dose management.
    - Cardiology for incidental ASD findings on the echo.
    - Continued ENT evaluation.

## TLB FINDINGS

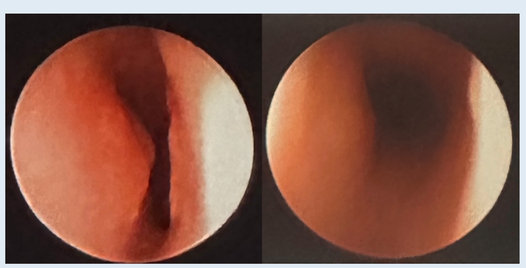

**Figure 1: Comparative TLB imaging.** The image on the left shows the initial findings on hospital day 3, revealing significant subglottic fullness, predominantly on the left side, suggestive of a subglottic hemangioma. The image on the right, taken on hospital day 21, demonstrates marked reduction in the size of the lesion with no signs of mucosal ulceration, indicating a positive therapeutic response to propranolol.

## DISCUSSION & KEY TAKEAWAYS

- **Hemangiomas in Infants:**
  - Common benign vascular tumors, often classified as superficial, deep, or mixed based on location.
  - Rapid proliferation in the first 1 to 3 months, with regression around 1 year of age.
  - Pathogenesis involves angiogenesis and vasculogenesis, with roles of endothelial cells and progenitor cells.
- **Subglottic Hemangiomas:**
  - Rare but potentially life-threatening airway tumor (1.5% of congenital abnormalities).
  - Presents with persistent croup-like symptoms, inspiratory stridor, feeding difficulties, or recurrent respiratory infections.
- **Diagnosis and Imaging:**
  - Telescopic Laryngoscopy bronchoscopy/ soft bronchoscopy is recommended for diagnosis.
- **Management & Treatment**
  - **Propranolol (1–3 mg/kg/day)** is the first-line treatment, often effective within days to weeks.
  - Close monitoring for side effects (bradycardia, hypotension, hypoglycemia) is essential.
  - **Corticosteroids** may be used in refractory cases but have significant adverse effects.
  - **Surgical intervention**
    - Considered for severe airway obstruction or failed medical therapy, often combined with propranolol/ steroids to prevent recurrence.
    - Surgical options include cold instrument supraglottic angioplasty, CO2 laser ablation, and resection.
    - High recurrence rate (80%) post-surgery
- **Key Takeaways:**
  - Infants with persistent or atypical croup-like symptoms should be evaluated for airway anomalies.
  - Avoid the use of steroids without clear diagnosis to prevent delaying the proper treatment.

## REFERENCES

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