Vocal Cord Dysfunction can be Misdiagnosed as Anaphylaxis

Ahmed Aaid Abdelsalam Osman[1], Lalani Heva[2], Youssef Aladham[3]

[1] Speciality Paediatrics Doctor, East Sussex Healthcare NHS Trust, Department of Paediatrics, UK, MRCPCH, MD, E-mail: ahmed.osman34@nhs.net
[2] Consultant Paediatrics, East Sussex Healthcare NHS Trust, UK, E -mail: h.lalani@nhs.net
[3] Speciality Doctor, East Kent Hospital, Department of ENT (Ear Nose and Throat),
E -mail: youssef.aladham2@nhs.net

Abstracts: Vocal cord dysfunction (VCD) is frequently misdiagnosed and mistreated as asthma, which leads to morbidity secondary to unnecessary medication use and increased health care utilization. In our case it was misdiagnosed over 8 months as anaphylaxis. Vocal cord Dysfunction can be presented after anxiety or cold exposure and misdiagnosed as anaphylaxis which leads to unnecessary medications and delaying in starting of breathing exercise strategies.

Keywords: Vocal Cord, Dysfunction, anaphylaxis.

1. INTRODUCTION

Vocal cord dysfunction (VCD) is a disorder caused by episodic unintentional paradoxical adduction of the vocal cords, which may induce acute severe dyspnea attacks not responsive to conventional asthma therapy. The etiology of VCD is complex and often multifactorial. The essential pathophysiology is that of a hyper functional laryngeal reflex to protect the lower airway as a result of any combination of post-nasal drip, gastro-esophageal reflux, laryngopharyngeal reflux and/or psychological conditions. Laryngoscopic demonstration of the paradoxical motion while wheezing or stridorous is considered the diagnostic gold standard. Speech therapy, including the use of special relaxed-throat breathing patterns is effective for VCD that is purely of the functional nature. Knowledge of the clinical features of VCD and identifying factors that may be contributing to the development of VCD can provide adequate clues to the correct diagnosis and management [1].

Although only 5–10% of asthma patients are thought to have resistant or severe asthma, this condition accounts for a disproportionate share of healthcare expenses. When treatment fails, medication therapy is frequently increased, including oral corticosteroids. However, these medications frequently have serious side effects, such as weight gain, fluid retention, acne, adrenal insufficiency, cataracts, stria, and other distressing cushingoid features. A wide range of differential diagnoses, such as noncompliance or nonadherence, continuous allergen exposure, chronic rhinosinusitis, and/or gastro-oesophageal reflux disease (GERD), might be considered while screening these patients. Vocal cord dysfunction (VCD), often referred to as paradoxical vocal fold motion disorder, is becoming more and more recognised as a common cause of respiratory symptoms in children and adults that is frequently recognized [2].

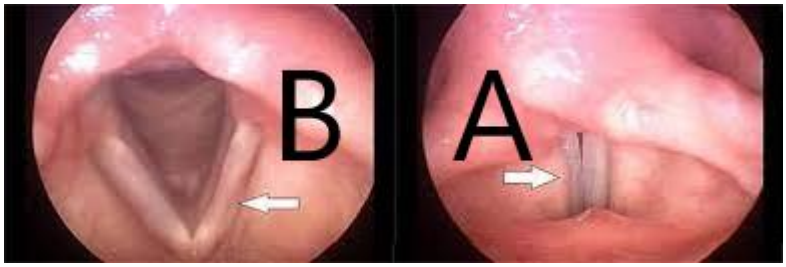
2. MATERIEL AND METHODS

2.1. Case description:

The child presented with frequent attacks of stridor, and she was treated as anaphylaxis with adrenaline SC, finally we diagnosed her as vocal cord dysfunction which explains her medical problem. Usually there is delay in diagnosis of VCD which leads to delay in treatment. There are 14 % of cases was misdiagnosed and treated as asthma. We present a case of a young girl in her 10s presented to our Emergency Department with a week history of stridor, difficulty of breathing and mild facial rash. Her blood pressure was normal, and her Chest examination showed no wheeze. She was treated with adrenaline injection, salbutamol inhaler and dexamethasone and antihistamine orally but no response. She has a history of frequent attacks (around 5 times over eight months) of stridor and difficulty breathing. The first attack happened in September 2023 after she was swimming in pool, and she was diagnosed as anaphylaxis, and she was given adrenaline injection twice. The second attack happened in October 2023 after she missed her friend and felt anxiety but not required adrenaline injection. She is not known to have any allergies before this year apart from omeprazole which is mild reaction and lactose which is moderate reaction, and both have been diagnosed in 2023.She has not had any family history of similar presentation. We checked her notes

to find that she was diagnosed as anaphylaxis in November 2023 with unclear trigger suspected chlorine or bromine and using adrenaline SC frequently. We explained to the child and her mother the diagnosis and importance of avoiding stress and anxiety to reduce laryngeal irritation. We also recommended learning emergency breathing strategies [3].

2.2 FIGURE/VIDEO CAPTIONS



A) Narrowing of vocal cords during anxiety
B) Widening of vocal cord after distraction of the patient/no Edema

2.3. DIFFERENTIAL DIAGNOSIS

1)Croup ->No fever or brassy cough and not age group of croup.
2)Foreign Body ->No history suggestive-chest is clear.
3)Anaphylaxis: No clear allergens, no Hypotension, cardiorespiratory instability, skin or mucus membrane findings, no significant improvement after medications and Serum Tryptase is normal.
4)Asthma: Chest clear, normal breathing sounds/her first presentation just 8 months ago.
5)Gastroesophageal Reflux: no risk factors and no fit clinically.
We started to think about Vocal Cord Dysfunction (Inducible Laryngeal Obstruction/Paradoxical vocal fold movement) due to the following considerations: her age as anaphylaxis usually presented in early ages, but vocal cord dysfunction presented in late age especially in female, some attacks induced with her anxiety, third, no response to anaphylaxis medication or antihistamine medications, prolonged stridor in the last time (one week) with normal oxygen saturation and chest examination, disappearance of the stridor sound during sleeping and distraction and the last thing which confirmed our diagnosis is ENT endoscopy which confirmed paradoxical vocal cord dysfunction that disappears on distraction and excluded evidence of allergic reaction ,airway oedema or angioedema [2] ,[4].

2.4. TREATMENT

Speech therapy: Techniques to help control breathing and vocal cord function
Breathing exercises: Specific exercises to relax the vocal cords
Behavioral therapy: To address stress and psychological factors
Medications: To treat underlying conditions like GERD
Avoidance of triggers: Identifying and avoiding known triggers.
Education: Understanding the condition and how to manage symptoms
Multidisciplinary approach: Working with a team of specialists including otolaryngologists, pulmonologists, and speech therapists [7].

2.5. PATIENT'S PERSPECTIVE

My daughter was suffering over the previous 8 months due to her recurrent attacks of stridor without known allergens and she used Epipen many times Epipen without significant improvement. The new diagnosis as vocal cord dysfunction more suitable with her case and I understand that treatment not easy.

2.6. OUTCOME AND FOLLOW-UP

The child is referred to tertiary hospital to start treatment and follow up plan, but unfortunately, she has another attack this month and again treated in Emergency Department as anaphylaxis by SC adrenaline.

3. RESULTS AND DISCUSSIONS

Significant morbidity and higher expenses result from misdiagnosing VCD as asthma or anaphylaxis; these findings may also be attributed to the abuse of asthma and anaphylaxis treatment methods. The opportunity exists to remove or reduce the demands on the patient and the healthcare system by timely and correct diagnosis of VCD and the application of breathing exercises [6] I could not find similar previous case reported with the same misdiagnosis.

CONCLUSIONS

Vocal Cord Dysfunction should be one of differential diagnosis of patient who has poor asthma control or frequent attacks of stridor especially with cold and anxiety exposure.

References

1. Koh, J., Phyland, D., Baxter, M., Leong, P., & Bardin, P. G. (2023): Vocal cord dysfunction/inducible laryngeal obstruction: novel diagnostics and therapeutics. Expert Review of Respiratory Medicine, 17(6), 429–445. https://doi.org/10.1080/17476348.2023.2215434
2. Slinger C, Slinger R, Vyas A, Haines J, Fowler SJ.(2019): Heliox for inducible laryngeal obstruction (vocal cord dysfunction): A systematic literature review. Laryngoscope Investig Otolaryngol. 8;4(2):255-258. doi: 10.1002/lio2.229. PMID: 31024997; PMCID: PMC6476266.
3-https://pubmed.ncbi.nlm.nih.gov/26932166/
4-https://toolkit.severeasthma.org.au/co-morbidities/pulmonary-upper-airways/vocal-cord-dysfunction/
5-Diagnosis of anaphylaxis | Diagnosis | Angio-oedema and anaphylaxis | CKS | NICE
6-https://www.hopkinsmedicine.org/health/conditions-and-diseases/vocal-cord-dysfunction
7-https://www.northumbria.nhs.uk/our-services/respiratory-services/respiratory-speech-and-language-therapy/inducible-laryngeal-obstruction#0579e8d6

DOI: https://doi.org/10.15379/ijmst.v11i1.3765