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Postoperative Conversion Disorder Presenting as Inspiratory Stridor and Hemiparesis in a Pediatric Patient

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Female, 13
Final Diagnosis: Postoperative conversion disorder
Symptoms: Right-sided weakness and right-sided sensory loss • difficulty speaking
Medication: —
Clinical Procedure: EUS/EGD
Specialty: Anesthesiology

Objective: Rare co-existence of disease or pathology
Background: Postoperative conversion disorder is rare and has been reported. The diagnosis is usually made after all major organic causes have been ruled out.
Case Report: We describe a case of a 13-year-old female who presented in the post-anesthesia care unit with acute-onset inspiratory stridor and unresponsiveness to verbal or painful stimuli after receiving a general anesthetic for upper endoscopy. Later in the post-anesthesia care unit, she presented with acute-onset right hemiplegia and sensory loss. She was first evaluated for causes of her stridor and unresponsiveness. The evaluation revealed paradoxical vocal cord movement, and all laboratory test values were normal. For her hemiplegia and sensory loss, she was evaluated for stroke with head MRI and CT scans, which were normal.
Conclusions: After extensive workup and consideration of multiple etiologies for her presenting signs and symptoms, the most likely diagnosis was conversion disorder.

MeSH Keywords: Adolescent Psychiatry • Conversion Disorder • Postoperative Complications • Respiratory Sounds • Stroke

Full-text PDF: <http://www.amjcaserep.com/abstract/index/idArt/901402>



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Background

Postoperative presentations of conversion disorder have been rarely reported in the literature [1–4]. The DSM-5 criteria for conversion disorder describe neurological symptoms that are genuine, yet not consistent with a neurological cause, and cause distress or psychosocial impairment [5]. It is also known as functional neurologic symptom disorder [5]. We report a case of acute-onset inspiratory stridor with unresponsiveness in a pediatric patient during the immediate postoperative period. The patient had undergone an unremarkable upper endoscopy and celiac plexus block under general anesthesia. We review the differential for acute-onset inspiratory stridor including paradoxical vocal cord movement. Following the resolution of inspiratory stridor and unresponsiveness, the patient had sudden-onset right-sided weakness, right-sided sensory loss, difficulty speaking, and a decreased level of consciousness concerning for a stroke. This report also reviews the differential diagnosis for acute changes in mental status and neurological exam in the post-anesthesia care unit (PACU), which includes nonorganic causes like somatoform disorders or conversion disorder.

Case Report

The patient was a 13-year-old female with a history of congenital pancreatitis status post pancreatectomy, splenectomy, and Langerhans cell transplant, as well as anxiety, chronic pain, and Arnold-Chiari malformation type I. She had no history of blood dyscrasias. She was in her usual state of health and presented for endoscopic ultrasound/esophagogastroduodenoscopy (EUS/EGD) with celiac plexus block for chronic pain. One month prior to this, she had undergone the same procedure uneventfully at the same institution.

Preoperatively, she had an unremarkable physical exam. Intraoperatively, she received a propofol infusion, fentanyl, and midazolam, with no muscle relaxant. Intubation was straightforward and atraumatic with a grade I view on direct laryngoscopy, and before the tube was passed through the cords two milliliters of lidocaine 4% was given around the vocal cords for laryngeal tracheal anesthesia. After an unremarkable anesthetic, she was extubated uneventfully. She was following commands and responsive when brought to the PACU. Shortly after arrival in the PACU, the anesthesia team was called regarding difficulty with speech, shortness of breath, and tightness in chest. She was making a harsh, loud inspiratory noise similar to stridor. She was notably tachypneic with a respiratory rate in the 30s. She maintained an oxygen saturation of greater than 95% on nasal cannula and her lungs were clear to auscultation.

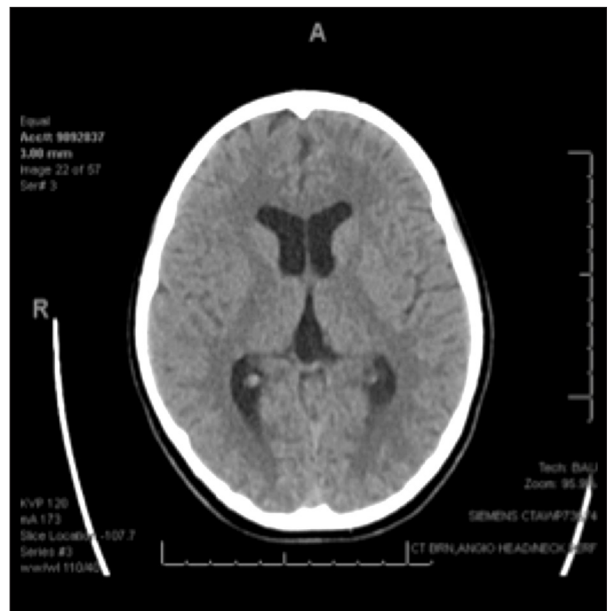


Figure 1. CT scan with no acute intracranial findings.

She received a racemic epinephrine nebulizer treatment and 0.5 mg of midazolam IV without change in her respiratory status. A nasal fiberoptic scope by ear, nose, and throat (ENT) services revealed good true vocal fold movement without fixed or dynamic obstruction. Electrolytes, lactate, and ABG were all within normal limits. A chest X-ray was unremarkable. ENT concluded that her situation was clinically suggestive of adductor paradoxical vocal cord movement. The patient’s mother related that the patient had a history of this harsh upper airway breathing noise after previous anesthetics that had resolved spontaneously.

Approximately thirty minutes after the onset of her shortness of breath, mental status changes were noted. These included difficult speaking, right-sided sensory loss, and right-sided weakness. The neurology team and rapid-response team were called for evaluation. On neurological exam, she exhibited decreased sensation in her right arm and leg, and drift in the right leg. Her reflexes remained symmetrical and equal throughout her extremities. She scored a 10 on the NIH stroke scale, and a stroke alert was called. At this point, her noisy breathing, shortness of breath, and tachypnea had improved, and she was breathing without difficulty. Her CT scan was negative for an acute intracranial process (Figure 1). Artifact from her braces limited her MRI, but it revealed nothing concerning for acute stroke (Figure 2). Gradually, the patient’s neurological exam began to vary in consistency. Of note, she demonstrated a positive Hoover’s sign. Hoover’s sign distinguishes nonorganic from organic weakness. Involuntary extension of the “paralyzed” leg occurs while flexing the non-paralyzed leg. This sign is absent in patients with true stroke [6]. The patient’s mental status and neurological exam gradually improved and returned



Figure 2. MRI scan, significantly limited exam without convincing evidence of acute infarct.

to baseline. She then went to the emergency room for further evaluation, but no organic cause was found.

Interestingly, the patient's mother shared an episode from earlier in the year. The patient had been the victim of a kidnapping attempt, and shortly afterwards, she awoke one morning unable to see, hear, or walk. The patient was admitted for evaluation without finding an organic cause. She gradually regained her senses of sight and hearing and her ability to walk over the course of weeks. Review of the patient's outpatient records revealed a working diagnosis of conversion disorder for that episode.

Discussion

We believe this patient had a conversion disorder that manifested with two different presentations: paradoxical vocal cord motion (PVCM) as postoperative noisy inspiratory breathing and acute-onset hemiplegia and sensory changes mimicking stroke.

Postoperative stridor is a serious issue that should be evaluated immediately. The differential includes laryngospasm, intubation injury, angioedema, hypocalcemia, and vocal cord dysfunction. PVCM, as our patient had, is caused by inappropriate adduction of the true vocal cords during inspiration, which causes turbulent flow and a noisy, stridorous inhalation [7]. Organic causes of PVCM include gastroesophageal reflux, neurological compromise, movement disorders, and brainstem compression [8]. Nonorganic causes include malinger or conversion disorder. The diagnosis of PVCM requires

careful history taking and fiberoptic nasal endoscopic examination while avoiding unnecessary interventions.

Other clues to diagnosis include the ability to speak normally, a fully awake patient, a history of anxiety and/or depression, and no effects on oxygenation. After the diagnosis is made, the best treatment is reassurance. Our patient's history of anxiety, her unremarkable nasal fiberoptic scope, as well as her previous episodes of noisy inspiratory breathing make conversion disorder the most likely cause.

Our patient's conversion disorder then manifested as mental status changes and right-sided hemiplegia with sensory loss. These symptoms during the immediate postoperative period have a broad differential, with the most grave being acute stroke. Our patient was young with no history of coagulation disorders, and she had remained normotensive throughout the surgery. In addition, MRI and CT imaging shortly after onset of the symptoms did not show any acute intracranial abnormality, making stroke very unlikely.

The differential for postoperative weakness also includes residual paralytic; however, she had not received any neuromuscular blockade and her pattern of unilateral weakness was not consistent with a residual paralytic. Other organic causes of postoperative weakness include muscle weakness from myasthenic disorders and mitochondrial disorders. The timeline and acuity of the patient's presentation does not align with these causes.

Once organic causes are ruled out, physicians must consider inorganic causes such as somatic symptom disorders. Somatic symptoms are physical symptoms that do not match medical pathology. They are common in the pediatric and adolescent populations, with up to half of pediatric primary care visits including significant, yet medically unexplained symptoms [9].

Conversion disorder is one example of a somatic symptom disorder. The DSM-5 defines conversion disorder as altered voluntary motor or sensory function with clinical findings that are incompatible with recognized medical conditions [5]. These symptoms must cause significant distress or impairment and may not be a result of another disorder [5]. It is not necessary to identify stressors/psychological factors in the diagnosis of conversion disorder [5].

The incidence of conversion disorder is 11–300 per 100,000 [9]. In the pediatric population, conversion disorder is most common among female adolescents and is associated with family stress, grief, and adjustment difficulties [9].

Pediatric conversion disorder seen after a general anesthetic is exceedingly rare. Other cases of conversion disorder

in pediatric patients immediately postoperatively include a 12-year-old girl with tongue paralysis after dental surgery [1], an 11-year-old with torticollis and neck pain after tonsillectomy [4], and a 16-year-old with left-sided weakness of the face and upper and lower extremities after laryngoscopy and injection of Gelfoam for left vocal cord paralysis [3].

Acute somatoform weakness simulating a stroke has been reported in three adolescents previously [6]. All three patients presented with acute onset of unilateral weakness, and all three had emergency CTs and MRIs that were negative. They were later found to have significant emotional stressors including gender identification difficulties and immigration adjustments. The authors suggest using Hoover's sign and somatosensory evoked potentials to distinguish between inorganic and organic causes [6].

References:

1. Haden R: Conversion reaction following anaesthesia. *Anaesthesia*, 2004; 59: 728–29
2. Hirjak D, Thomann PA, Wolf RC et al: Dissociative paraplegia after epidural anesthesia: a case report. *J Med Case Rep*, 2013; 7: 56
3. Judge A, Spielman F: Postoperative conversion disorder in a pediatric patient. *Pediatr Anesth*, 2010; 20: 1052–54
4. Reilly MJ, Milmore G, Pena M: Three extraordinary complications of adenotonsillectomy. *Int J Pediatr Otorhinolaryngol*, 2006; 70: 941–46
5. American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*, American Psychiatric Association, Arlington, VA, 2013
6. Shahar E, Ravid S, Hafner H et al: Diagnostic value of Hoover sign and motor-evoked potentials in acute somatoform unilateral weakness and sensory impairment mimicking vascular stroke. *J Clin Neurosci*, 2012; 19: 980–83
7. Wareing MJ, Mitchell D: Psychogenic stridor: Diagnosis and management. *J Accid Emerg Med*, 1997; 14: 330–32
8. Rewari, V: Post-operative paradoxical vocal cord movement due to non-organic conversion disorder. *Acta Anaesthesiol Scand*, 2006; 50: 900
9. Thomson K, Randall E, Ibeziako P, Bujoreanu IS: Somatoform disorders and trauma in medically-admitted children, adolescents, and young adults: prevalence rates and psychosocial characteristics. *Psychosomatics*, 2014; 55: 630–39

Workup for our patient showed no organic cause to explain either her paradoxical vocal cord motion or her acute-onset sensory loss and hemiplegia. To our knowledge this is the first case reported that includes both presentations in one patient during a single episode.

Conclusions

Conversion disorder can rarely manifest in the postoperative period. This diagnosis should be considered in the differential diagnosis of stridor and hemiparesis in the absence of organic causes.

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