Morgagni Hernia in an Infant

Case Study #1

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Morgagni Hernia in an Infant

Subjective Data

The patient discussed in this case study was chosen due to the unique and unexpected finding during a routine, problem-focused visit. Further research of the patient’s condition reinforced the fact that the clinical finding is rare.

Patient Profile

Identifying Factors

The patient is a 5-month old male who presents to the 18 & Under MD with cough and fever. He is accompanied by his mother.

Background Information

Chief Complaint

The patient’s mother states the child has had a “wet” cough for four days along with a low grade fever and some diarrhea.

HPI

The patient has had a wet cough for four days along with a low grade (T-Max 101) fever. He had a runny nose on Friday with clear to light yellow drainage. The cough has worsened since Friday and has caused some gagging. He has had no episodes of emesis or diarrhea. He has had some nasal congestion for which mom has used saline nasal drops and a bulb syringe to relieve and has now improved. His temperature was 100.3 this morning. He has not tugged on his ears. He has not been fussy.

Past Medical History

Illnesses:

1. Jaundice (mild)
2. Right-sided posterior-parietal cephalohematoma
3. Naso-lacrimal dacryostenosis
4. Penile adhesions
5. Mild plagiocephaly

Allergies: No known drug allergies.

Surgeries: None.

Medications: Poly-vi-sol Multi-vitamin 1mL PO daily

Birth History:

Term (40.1 weeks), average for gestational age infant born to a 29 year old G 1 P 0 via spontaneous vaginal delivery following induction. Weight: 7 lbs. 9 oz. Length: 20 ¾ inches. Head Circumference: 13 ¾ inches. APGAR: 8/9. Maternal group beta strep negative, HIV negative, VDRL non-reactive, Rubella immune, blood type O, RH positive. No meconium noted with rupture of membranes. A significant caput and bruising was noted following delivery. Vital signs were stable following delivery. Physical exam revealed no other abnormalities. A circumcision was performed in the hospital prior to discharge. The baby was discharged home with mother on the second day of life.

Health Maintenance:

1. Well-child exam, 3 days old, 5/11/09, TdaP for mom
2. Well-child exam, 12 days old, 5/20/09
3. Well-child exam, 1 month old, 6/3/09, U/S scalp mass (cephalohematoma)
4. Well-child exam, 2 months old, 7/6/09, Vaccines: HBV, DTaP, Hib, IPV, PCV7, Rota, TdaP for dad
5. Well-child exam, 4 months old, 9/8/09, Vaccines: DTaP, Hib, IPV, PCV7, Rota

Social History

The infant lives with his mother and father in Lewisville, Texas, in a single-family home. Mother and father both work outside the home. He began attending daycare at three months of age and is there five days per week. Mom is breast feeding at night and provides expressed breast
milk (5 oz) every 3 hours while at daycare. He takes about 3 one-hour naps per day and sleeps nine hours at night. The parents have insurance through the father’s employer.

*Family History*

His parents are in their late 20’s. He is the firstborn child to the couple. His parents are both healthy with no chronic illness or genetic anomalies. There is no significant history for genetic or chronic illness for grandparents, aunts, uncles or other extended family members. His father is positive for nut allergies. Thus, it is recommended to hold solid foods until after the age of six months.

*Review of Systems*

*General health:* Mom reports infant happy and playful despite fever and cough. The infant has had no developmental delays and growth remains steady according to the standardized growth curve.

*Skin/Hair/Nails:* No dryness, cyanosis or pressure alopecia at occiput.

*HEENT:* Calicified cephalohematoma at right scalp present since birth. Mild plagiocephaly. Denies trauma. Mild nasal congestion. Moderate to large amount clear to light yellow, mucoid nasal drainage. No tugging at ears. Taking PO bottles/breastfeeding without difficulty.

*Neck/Lymph:* No lumps or swelling.

*Breast:* Not applicable.

*Chest/Lungs:* Cough for four days with increasing intensity. Coughs more when supine. Sleeping with HOB elevated.

*CV:* No edema or cyanosis.

*Peripheral Vascular:* Capillary refill immediate.
GI: Appetite good/unchanged. No emesis or spit up. Two episodes of loose stools/diarrhea. No blood in the stool.

GU: Wears diapers, mild penile adhesions.

Endocrine: Not evaluated.


Psychiatric: Mildly flat affect of mother. Mother and father ask appropriate questions.

Objective Data

Physical Examination

Vital Signs: Length: Not measured; Weight: 18 lbs. 8.5 oz; HR: 146; RR: 52; BP: not done; O2 sat: 98

General: 5 month old Caucasian male in no acute distress. Well developed and well nourished. Developmentally appropriate activity compared with chronological age. Playful and active. Dressed appropriately and well-groomed.

Skin/Hair/Nails: Skin warm and pink. No rashes noted. Turgor brisk.

Head: Anterior fontanel soft and flat. Calcified cephalohematoma 5.5 x 5.0cm. Mild plagiocephaly. No scaling or lesions noted.

Neck/Lymph: Supple. No nuchal rigidity. No LAD.

Lungs/Chest: Coarse to LLL. Mild tachypnea. No stridor. No wheezing. Increased tracheal sounds.

CV: Heart rate with regular rate and rhythm. S1S2 audible without murmur.

Abdomen: Soft, nontender with normoactive bowel sounds. No distention.

Breasts: Not examined.


Genitalia: Not examined.

Rectal: Not examined.


Previous Lab/Testing:

Ultrasound Head: calcified hematoma 5x6 cm. 6/15/09

Tests/Treatments Ordered:

RSV: Negative

Nebs: Xopenex 0.31mg per nebulizer with Pulmicort 0.5mg per nebulizer x 1 now.

(Following treatment, RR 48/min; O2 Sat 97-98%)

Deep Suction x 1 now. (Marked improvement in respiratory sounds.)

CXR

Discussion of Findings

The infant presents with a congested cough, runny nose, and low grade fever. His breath sounds are coarse with mild improvement after respiratory treatment. Marked improvement following deep suction. His TMs are dull but with no erythema. Sclera and conjunctiva clear. His
heart rate regular in rate and rhythm. He has no cyanosis and his capillary refill is immediate. His
general demeanor is playful and active and without acute distress. He has a 5cm calcified
cephalohematoma and mild plagiocephaly. RSV negative. CXR shows bronchial wall thickening
with likely bronchiolitis. In the left lung base “anteriorly is a bubbly appearance of the
parenchyma, which appears contiguous with bowel below the diaphragm, suggesting a hernia”
(possible Morgagni hernia). Evaluation with chest CT is recommended.

Assessment/Impressions

1. Bronchiolitis 466.19
2. Cough 786.2
3. Morgagni hernia 756.6

Congenital hernia of Morgagni (CMH) is relatively rare (3% to 5%) among congenital
diaphragmatic hernias (Mallick & Alqahtani, 2009; Al-Salem, 2007). The overall incidence
is approximately 1% to 6% and occurs more frequently in males than females (2 to 1 ratio)
(Al-Salem). Their diagnosis is typically made incidentally and may go undetected into
adulthood. When CMH is diagnosed in children it may present causing nondescript
respiratory or gastrointestinal symptoms. Respiratory symptoms may be more severe during
infancy (Al-Salem). Standard surgical repair is either via thoracotomy or laparotomy
(Mallick & Alqahtani). Newer studies indicate efficacy of laparoscopic repair as an
alternative to the open procedure (Mallick & Alqahtani).

In two separate studies of CMH, researchers found 33 of 35 infants and children
presenting with recurrent chest infections or respiratory difficulty (Al-Salem; Mallick &
Alqahtani). Bronchiolitis occurs more frequently in children under age two years than any
other diagnosis in primary care (Mansbach, Pellietier, & Camargo, 2007). Parainfluenza,
human metapneumovirus, influenza, adenovirus are causes that are seen less frequently than

**Differential Diagnoses:**
1. Atypical infection (pneumonia)
2. Pulmonary sequestration

**Chronic Diagnosis:**
1. Calcified cephalohematoma
2. Mild Plagiocephaly

**Plan**

**Laboratory Tests:**

None.

**Diagnostic Tests:**

None. Diagnosis of Morgagni hernia is made with CXR. No further diagnostic evaluation is necessary (D. Renard, personal communication, October 6, 2009).

**Health Maintenance:**

Up to date. The next scheduled exam is the six-month well visit with immunizations.

**Medications:**

Azithromycin 100/5 4ml PO q day x 1, then 2ml PO q day x 4 days

**Education:**

Parents were educated regarding bronchiolitis course of disease, treatment, signs and symptoms of worsening, and when to contact physician. Parents were also educated regarding Morgagni hernia. Information from the pediatric surgeon was shared with parents. Reassurance
was given regarding the non-emergent nature of this diagnosis. Written information was provided to parents regarding bronchiolitis as well as CMH. Education was also given regarding use of antibiotics for bronchiolitis.

Referral:

1. Pediatric Surgery--An appointment was made for the patient with pediatric surgery two days after being seen on this visit date.

Follow-up and Continuity of Care:

The patient recovered from bronchiolitis without need for further respiratory treatments. Parents were instructed to contact the office for return appointment should respiratory condition worsen. The infant discussed in this case study was seen by the pediatric surgeon two days after this visit. He underwent laparoscopic repair of the diaphragmatic hernia one week later. He was observed in the hospital overnight. The mother reported he was able to have formula in the evening following surgery and other than mild fussiness, had no complications. The infant will follow up with the surgeon six weeks post-operatively. The patient will follow up in our office for his 6-month well child visit.

Discussion:

Respiratory syncytial virus (RSV) is the most common cause of acute bronchiolitis (Mansbach, Pelletier, & Camargo, 2007; Hay, Levin, Sondheimer, & Deterding, 2009). Non-RSV bronchiolitis in infants may be caused by other viruses such as parainfluenza, human metapneumovirus, influenza, adenovirus, *Mycoplasma*, and others. Bronchiolitis affects almost 40% of all children by the age of two years (Mansbach et al.). It is characterized by one to two days of low grade fever, rhinorrhea, and cough. These symptoms may be followed by wheezing,
tachypnea, and respiratory distress. Infants may demonstrate distress via rapid (>60 breaths/min), shallow breathing, nasal flaring, retractions, and coarse breath sounds. In clinical practice, these patients tend to worsen over a seven day period of time with the seventh day typically the worst in terms of cough, work of breathing, and general appearance. While there is currently no vaccine for RSV, there is prophylaxis with palivizumab (Syanagis®) for infants at high-risk (prematurity, congenital heart defects, and chronic respiratory disease) (Hay et al.).

Treatment of bronchiolitis remains controversial in the literature (American Academy of Pediatrics, 2006; Zorc, 2008). This controversy is, in part, related to the wide variation in presentation as well as response to therapy. In a recent study of outpatient primary care visits, Mansbach et al. (2007) found that 52% of outpatients were prescribed bronchodilators while 23% were prescribed antibiotics. An additional 7.1% were prescribed inhaled corticosteroids despite a lack of evidence for efficacy (Mansbach et al.). The authors further found that 2% of the outpatients treated for bronchiolitis required hospitalization due to severity of illness while greater than 50% were managed with follow-up visits in the primary care setting. Although antibiotics are not generally recommended for use with bronchiolitis, they continue to be used in young infants due to concern over the possibility of bacterial infection (American Academy of Pediatrics). Inhaled bronchodilators and inhaled corticosteroids are also not routinely utilized in the management of bronchiolitis unless the infant demonstrates objective improvement following a trial of medication (American Academy of Pediatrics). Prognosis for infants with bronchiolitis is good for most infants although some concern exists regarding long-term compromise of lung compliance following infection in children younger than one year of age.

Congenital Morgagni hernia is a rare finding accounting for approximately 3% to 5% of all types of congenital diaphragmatic hernias (Al-Salem, 2007). Patients with this condition may
present as having recurrent chest infection or gastrointestinal symptoms. It is presumed that this defect is present, but small, at delivery increasing in size due to weakness of the diaphragm either due to increased abdominal pressure, trauma, or other physiologic changes. Chest radiograph shows a bubbly appearance of the parenchyma contiguous with bowel below the diaphragm. (See Appendix A for the patient’s radiograph). Surgical repair is considered standard of care even in children who are asymptomatic although there is continued debate among pediatric surgeons as to the surgical approach (Al-Salem). In a review of 360 children with CMH, researchers found open laparotomy to be performed more frequently than other approaches (n=253) such as laparoscopy (n=2) (Baglaj, 2004). Complications resulting from congenital diaphragmatic hernias are minimal (n=46) with large bowel strangulation cited most frequently followed by gastric volvulus, small bowel strangulation, and gastric perforation (Baglaj). Complications associated with CMH, however, are virtually non-existent (Mallick & Alqahtani, 2009; Al-Salem). Prognosis for full recovery following CMH repair is excellent with no morbidity or recurrence reported (Mallick & Alqahtani; Al-Salem).
References


Figure 1. AP View Chest

Figure 1. Note “bubbly” appearance in left lung space. Left-sided hernia found in only 2% of CMH.

Figure 2. Lateral View Chest

Figure 2. Note contiguous bowel loop at anterior aspect of chest wall.