CLINICAL VIGNETTE

Pediatric Pneumonia Presented with Acute Abdominal Pain

Roya Mojarrad, MD

An 8-year-old was brought to the office by her mother for abdominal pain and low appetite for 2 days. She had nausea and mild diarrhea, no upper respiratory symptoms, no cough, no fever, no vomiting.

The patient appeared mildly ill with vital signs of T 100°F, Pulse 118/min, respiratory rate 24/min, BP 100/55 mmHg, O2 sat 98%. Physical exam included normal HEENT, crackles at the right base, and abdomen was not distended, with hyperactive bowel sounds, and RUQ and RLQ tenderness without rebound. Office chest radiographs showed right lower lobar consolidation. Labs included: WBC 16000, with 70% neutrophil, normal CMP, negative Flu and rapid strep test and normal urinalysis.

She was diagnosed with Community-acquired Pneumonia. She did not meet criteria for hospitalization so she was treated as an outpatient with azithromycin for 5 days with close follow up.

In two days, her abdominal pain improved and she had normal temperature. She fully recovered and had normal exam and CXR at follow up 2 months later.

Discussion

Children with abdominal pain require a comprehensive physical examination, looking for signs of systemic illness and for disease in areas adjacent to the abdomen. Children with pneumonia, particularly in the lower lobes, may complain of abdominal pain.[1] Associated symptoms usually include fever, tachypnea, and/or cough. Auscultation of the lungs may demonstrate focal abnormalities (i.e. decreased breath sounds or crackles), although some children with pneumonia may have normal breath sounds on examination.

Lower lobe pneumonia or pleural effusion may cause diaphragmatic irritation.

Community-acquired pneumonia (CAP) is defined as an acute infection of the pulmonary parenchyma in a patient who has acquired the infection in the community.

Children with CAP who are typically treated empirically as outpatients. Tests to identify a bacterial etiology are not recommended for most children who are well enough to be treated in the outpatient setting.[2]

The decision to hospitalize a child with CAP is individualized based upon age, underlying medical problems, and clinical factors including severity of illness.

S. Pneumonia is the most frequent cause of "typical" bacterial pneumonia in children of all ages.[2] However, in otherwise healthy children five years and older with CAP who are not ill enough to require hospitalization, M. Pneumonia and C. Pneumonia are the most likely pathogens.

Macrolide antibiotics are recommended for initial empiric therapy for suspected atypical CAP in children older than five years who are treated as outpatients.

Among the macrolide antibiotics, clarithromycin and azithromycin have a more convenient dosing schedule and fewer side effects than erythromycin but erythromycin is less expensive.[3]

Children with CAP who are treated as outpatients (including those who were not initially treated with antibiotics) should have follow-up within 24 to 48 hours.[2]

Those that are appropriately treated generally show signs of improvement within 48 to 72 hours. Patients whose condition has worsened require additional evaluation and hospitalization.

Failure to improve while being treated with a macrolide antibiotic may indicate the need to perform diagnostic tests to confirm M. Pneumonia and/or alter therapy to provide better coverage for S. Pneumonia or macrolide-resistant M. pneumonia.

Follow-up radiographs are not necessary in asymptomatic children with uncomplicated CAP.[4]

Most otherwise healthy children who develop pneumonia recover without any long-term sequelae.[5]

Conclusion

In children with acute abdominal pain, extra abdominal causes should be considered especially if there are respiratory symptoms or fever or abnormal labs like leukocytosis. Comprehensive physical examination will minimize risk of missing a serious diagnosis. Chest x-rays should be considered in children with abdominal pain with unknown cause.

Prompt diagnosis is important to allow for early treatment and preventing complications of pneumonia and avoiding unnecessary abdominal evaluation.

REFERENCES

1. **Kanegaye JT, Harley JR**. Pneumonia in unexpected locations: an occult cause of pediatric abdominal pain. *J Emerg Med*. 1995 Nov-Dec;13(6):773-9. doi: 10.1016/0736-4679(95)02018-7. PMID: 8747626.
2. **Bradley JS, Byington CL, Shah SS, Alverson B, Carter ER, Harrison C, Kaplan SL, Mace SE, McCracken GH Jr, Moore MR, St Peter SD, Stockwell JA, Swanson JT; Pediatric Infectious Diseases Society and the Infectious Diseases Society of America**. The management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. *Clin Infect Dis*. 2011 Oct;53(7):e25-76. doi: 10.1093/cid/cir531. Epub 2011 Aug 31. PMID: 21880587; PMCID: PMC7107838.
3. **Harris JA, Kolokathis A, Campbell M, Cassell GH, Hammerschlag MR**. Safety and efficacy of azithromycin in the treatment of community-acquired pneumonia in children. *Pediatr Infect Dis J*. 1998 Oct;17(10):865-71. doi: 10.1097/00006454-199810000-00004. PMID: 9802626.
4. **McCrossan P, McNaughten B, Shields M, Thompson A**. Is follow up chest X-ray required in children with round pneumonia? *Arch Dis Child*. 2017 Dec;102(12):1182-1183. doi: 10.1136/archdischild-2017-313980. Epub 2017 Oct 11. PMID: 29021188.
5. **Sandora TJ, Harper MB**. Pneumonia in hospitalized children. *Pediatr Clin North Am*. 2005 Aug;52(4):1059-81, viii. doi: 10.1016/j.pcl.2005.03.004. PMID: 16009257; PMCID: PMC7118979.