



ORIGINAL RESEARCH PAPER

Paediatrics

CASE REPORT OF AN INDIAN IMMUNOCOMPETENT TODDLER WITH LUNG ABSCESS

KEY WORDS: lung abscess, thick walled cavitary lesion, computed tomography

Dr Deepa A. Banker	M.D. Paediatrics, Professor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Zankhana .R. Parekh	M.D. Paediatrics, Associate Professor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Shachi Y. Ganatra	M.D. Paediatrics, Assistant Professor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Priyanka B. Shah	M.D. Paediatrics, 3rd Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Vimal T Maheshwari	M.D. Paediatrics, 3rd Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Utsav A. Patel	M.D. Paediatrics, 2nd Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Nikita N. Patel	M.D. Paediatrics, 1st Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Dviti D. Bhadiadra	M.D. Paediatrics, 1st Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad
Dr Mansi S. Thakkar	M.D. Paediatrics, 1st Year Resident Doctor, Department Of Paediatrics, NHL Municipal Medical College, Ahmedabad

ABSTRACT

Pulmonary abscess is defined as lung infection that destroys the lung parenchyma, resulting in cavitation and central necrosis, can result in localised area composed of thick-walled purulent material.[1] It can be either primary or secondary. Here we present a case of a 3 year old female child who presented to our hospital with complaints of fever, cough, cold, vomiting and decreased oral intake for 10 days. Lab tests revealed neutrophilic leucocytosis and raised inflammatory markers. Chest roentgenogram and High resolution Computed Tomography of thorax were done which established the diagnosis and size of lung abscess. Injectable antibiotics in form of cephalosporin, aminoglycoside and glycopeptide group of drugs together were administered. Nosurgical intervention was needed. There was slow and steady improvement in the patient's condition. Patient was discharged after 4 weeks of injectable antibiotics followed by a course of oral antibiotics for 3 weeks to be taken at home.

INTRODUCTION

Pulmonary abscess is defined as lung infection that destroys the lung parenchyma, resulting in cavitation and central necrosis, can result in localised area composed of thick-walled purulent material. Incidence among children is 0.7/1,00,000 admissions/year worldwide.[1] It is divided into two categories - A) Primary B) Secondary. Primary lung abscess is mostly seen in right lobe, solitary and with no predisposing medical condition. Secondary lung abscess is mostly seen in left lobe, multiple with underlying or predisposing medical condition. Aspiration being the most common predisposing condition while others being pneumonia, gastro-oesophageal reflux disease, Cystic fibrosis, Tracheoesophageal fistula, immunodeficient seizure and condition which impair the mucociliary defence mechanism of pulmonary system. Interestingly it is also seen as a postoperative complication of Tonsillectomy and Adenoidectomy.[2] The etiology of lung abscess can be aerobic like Streptococcus, Staphylococcus, E Col Klebsiella pneumoniae; anaerobic like Bacteroides species Fusobacterium species and Pepto streptococcus or fungal in immunocompromised. An aspirated foreign body/ infected material is the predominant source of infected material. Drainage of aspirated material/ fluid is impaired by pneumonia which causes inflammatory vascular obstruction leading to necrosis of tissue, liquefaction and abscess formation. Pulmonary abscess is also a complication of pneumonia or as a hematogenous seed from any other body

site. Lung abscess in children is extremely rare and is decreasing due to significant pharmacological advances.[3] Immunodeficient syndromes or immunosuppressive states caused by viral infection, systemic disorders, and neurologic disorders are all risk factors for aspiration lung disease. [4] Common symptoms include fever, cough and emesis where as other symptoms observed are tachypnoea, dyspnoea, chest pain sputum production, weight loss or haemoptysis. [1] Gram positive (most commonly), gram negative and anaerobic bacteria (for e.g., bacteroid, fusobacterium species and peptostreptococcus species. have been causative organisms for abscess. Gram positive include streptococcus and staphylococcus species. Mycoplasma infection can also cause abscess. [5] Parenteral antibiotics combined with physiotherapy are the first line of treatment for a lung abscess. [6] Although long courses of intravenous antibiotics have been used successfully for many years, the evolution of interventional radiology has seen the use of percutaneously placed 'pigtail catheters' inserted under ultrasound and computed tomography guidance become the mainstay of therapy where such resources are available, it reduces the duration of injectable antibiotics..[7] Our case responded to medical management alone but few cases require surgical intervention. Abscess drainage is needed in around 20%. [8] Previously from 1956-1963 all abscesses were drained via bronchial aspiration of cavity. Around 1964-65 physiotherapy was used for drainage in which patient had to

inhale aerosol solution of 10% propylene glycol followed by percussion of chest wall to implement cough and drainage. [9]

In this report we present a case of primary lung abscess in a 3 year old female child.

Lab parameter	Day 1 of admission	Day 7 of admission	Day 14 of admission	Day 21 of admission
Hb	9.9	9.4	10	8.8
Hematocrit	33	31.7	30.5	29
Total count	13940	16890	19870	9980
Differentia l count	82/09	72/57	79/12	63/30
plateletcount	4.37	5.9	4.86	4.49
C-reactive protein (negative- 0.6)	4.8	1.2	9.6	1.2

table-1 : Laboratory investigation during hospital stay

CASE STUDY

This is case of a 3 year and 6-month-old female child who was admitted with complaints of fever, cough, cold, vomiting and decreased oral intake for 10 days. Neither the family nor personal history revealed any similar complaints. The relatives consulted 3 paediatricians earlier who prescribed oral medication in form of antipyretics. No antimicrobials were ever prescribed. As there was no improvement in the patient's condition, child was brought to our emergency room with temperature of 103.5 F and tachypnoea. Clinical examination on admission showed sick look, pallor, tachycardia (160/min) tachypnoea(66/min) and absent air entry over rt lung upper and mid zone with peripheral saturation 98% on room air. The patient weighed 14 kg and height 109 cm. Laboratory investigation(Table-1) on day of arrival revealed high total count with predominant neutrophilia with thrombocytosis and raised inflammatory markers. On admission chest skiagram (Figure 1) was done which was suggestive of well-defined thick walled large round cavitory lesion noted in right upper and mid zone with internal air-fluid level p/o lung abscess. A High resolutionThoracic Computed tomography (CT) (Figure 2) was done which established diagnosis and exact location of lung abscess. Injectable antibiotics in form of cephalosporin, aminoglycoside and glycopeptide group of drugs together were administered. Oxygen was given via mask for initial 3 days. Surgery was deferred as patient had no signs of increased rate or work of breathing. Ultrasonogram of abdomen was done to look any abscess in abdomen. Patient initially became afebrile and sick look improved after 2 weeks of injectable antibiotics. Tuberculosis a prime infection of our region was ruled out. Other focus of fever and tropical infections were ruled out. Xray chest showed improvement which was aligned clinically in form of improvement in air entry on auscultation over affected areas. Chest physiotherapy was started for postural drainage. Paediatric surgery opinion was taken as and when required. Surgical intervention was deferred as patient showed Clinical improvement. Blood culture was negative. Chest roentgenogram (Figure 3) and CT of thorax region (Figure 4) showed resolution which was perfectly aligned with both laboratory parameters of decreasing total counts, neutrophilia and CRP. Injectable antibiotics were continued for a total of 4 weeks and patient was discharged successfully on oral medications.



Figure 1: Chest Xray on admission

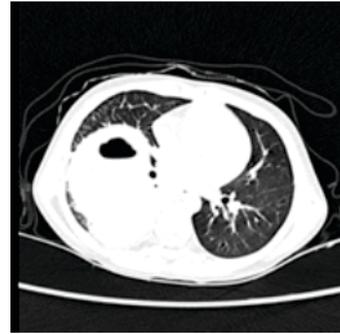


Figure 2: CT scan of patient on admission



Figure 3: Xray of patient after 28days of antibiotics

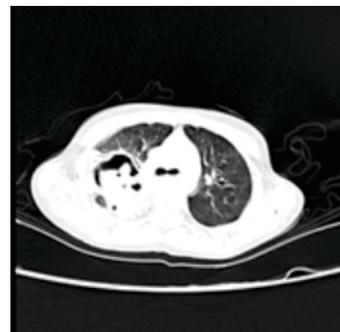


Figure 4: CT Thorax scan of patient on discharge

CONCLUSION

Primary lung abscess is rare problem encountered in paediatrics but it still can become a life-threatening condition with initial symptoms of just fever and cough of acute origin. A mindful clinical examination comprising of percussion and auscultation along with radiological evidence can provide early diagnosis of this condition. A patient with underlying or predisposing any medical conditions one has to be vigilant regarding aspiration, pneumonia which may result to secondary abscess. Interventional radiology now not only diagnosis but also helps in placing a percutaneous drain which can hasten recovery.

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