Case Series

Case series of Pleural effusion in Antenatal womens

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Abstract

Pleural diseases in pregnancy is less common in our settings compared to general population. However these group of diseases may lead to significant diagnostic dilemmas with high morbidity and mortality. Most of the symptoms may be confused with normal physiological changes. Clinicians should differentiate these diseases from normal physiological changes by meticulous history taking and clinical examination. Careful multi-disciplinary team management involving the obstetricians, paediatricians, anaesthetists, pneumologists and thoracic surgeons in intensive care settings can save lives.In this case series , We are reporting four different clinical scenarios which presented as pleural effusion in antenatal mothers with varied etiology. It is incumbent upon clinicians caring for pregnant women to be alert to distinguish between pathology and normal physiology so that they can get appropriate timely interventions.

Keywords: Pleural effusion,Pregnancy

Introduction

Pleural diseases in pregnancy is less common in our settings compared to general population. However these group of diseases may lead to significant diagnostic dilemmas with high morbidity and mortality. So it is essential that obstreticians who are managing these cases should be well informed about these conditions so that they can diagnose early and institute prompt management protocols. Pleural effusions, Pneumomediastium and pneumothorax are known complications of pregnancy[1]. Other causes include empyema/ parapneumonic effusions with underlying pneumonia, hemothorax[2] due to ruptured ectopic pregnancy. Pregnancy is itself a risk factor for various pulmonary complications due to its immune compromised state. Most of the symptoms may be confused with normal physiological changes. Clinicians should differentiate these diseases from normal physiological changes by meticulous history taking and clinical examination. HIV and pulmonary tuberculosis in pregnancy lead to a high chance of complicated pleural diseases.Careful multi-disciplinary team management involving the obstetricians, paediatricians, anaesthetists, pneumologists and thoracic surgeons in intensive care settings can save lives.

Case 1

28 year old female ,G2P1L1 with 3 months of gestation came to our centre with chief complaints of left sided pleuritic chest pain for 20 days, Low grade fever with evening rise of temperature for 10 days with loss of appetite. She didn't had significant past history of any illness or hospitalisation. No history of contact with Pulmonary TB case. On examination, patient is pale with bilateral multiple cervical adenopathy involving post cervical nodes.

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On respiratory system examination, Vesicular breath sounds which was heard in reduced intensity in left infraxillary and infrascapular area with pleural rub in Infraxillary area.Patient was provisionally diagnosed to have left sided pleural effusion with Multiple cervical lymphadenopathy and worked up further.

Complete blood count revealed iron deficiency anemia with raised ESR. Electrocardiogram was within normal limits. Ultrasonography of chest showed left sided moderate effusion with septations Diagnostic thoracocentesis was performed with strict aseptic precautions under sonographic guidance .20 ml of straw coloured fluid was aspirated and sent for evaluation.Pleural biochemical analysis includes Pleural fluid protein, sugar, Lactate dehydrogenase(LDH),Adenosine deaminase (ADA),Pleural fluid for Direct AFB smear, Gene amplification test(CBNAAT),AFB culture, and Pyogenic culture.Pleural analysis were suggestive of exudative effusion with lymphocytic predominance. Pleural fluid gene amplication test (CBNAAT) was positive.Cultures were unyielding. Therapeutic thoracocentesis was performed before discharge.

Patient was started on antitubercular therapy Fixed dose combination (FDC) Four drug daily regimen(HRZE) under DOTS. Patient was symptomatically improved and discharged.

Case 2

32 year old G3P2L2 came to our hospital with 6 months of gestation with history of high grade fever with chills for the past 1 week, cough with brownish sputum for 5 days, Breathlessness for 5 days with MMRC grade 2 and progressive in nature. Patient is a known case of diabetes mellitus who was under regular follow up with an endocrinologist. She is a known case of hypertension on treatment with beta blockers.

On examination at the time of admission,she was febrile,tachypnoic using accessory muscles,with room air saturation(Spo2) of 91%.On Respiratory system examination, vesicular breath sounds reduced in intensity in left infrascapular area with coarse crepitations heard in Infraaxillary and infrascapular area.Patient was admitted in our ICU with clinical suspicion of community acquired pneumonia and parapneumonic effusion. Complete blood counts revealed leucocytosis with polymorph predominance. Urine routine examinations were unyielding. Sputum gram stain showed plenty of

gram positive cocci in chains. Sputum culture yielded heavy growth of streptococci sensitive to penicillins. Chest x ray showed right sided moderate effusion .Ultrasonogram(USG) chest showed right sided effusion with multiple thick septations(Figure 2).Under strict aseptic precaution,14 F Pig tail catheter was inserted into the right pleural space with USG guidance.1200 ml of Turbid straw coloured fluid along with multiple strands was drained. Patient was started on piperacillin tazobactum along with other supportive therapies. With all these measures, patient was symptomically improved and hence discharged.

Case 3

23 year old female with 2 months gestation Primigravida came to our hospital with complaints of right sided pleuritic chest pain for 14 days, cough with blood stained sputum for 10 days, Breathlessness on exertion for 10 days, MMRC grade 2 which was progressive and fever for 7 days. No significant past illness. On examination, breath sounds reduced in intensity in right infra scapular area. Chest x ray was done with abdominal shield which showed minimal right sided pleural effusion. Complete blood count was within normal limits. Electrocardiogram showed classical S1Q3T3 pattern.2D Echo showed Moderate pulmonary hypertension with Preserved Ejection fraction.MR Angiogram showed features of thrombo embolism involving Right Infra lobar pulmonary artery.

Patient was provisionally diagnosed to have Acute pulmonary embolism and started Injection heparin along with other supportive measures. Before instituting heparin, Blood sample was collected for Thrombophilia screening (Anti thrombin, Leiden V mutation, Homocysteine) and sent for further analysis. Leiden V mutation was found to be positive in thromphilia profile. Patient symptomatically improved and discharged with the advice to continue oral anticoagulant.

Case 4

30 year old female with 4 months of gestation came to our hospital with complaints of fever which was intermittent for 1 month and dry cough for 15 days. she also complained of vague left sided chest pain which increases on strenuous exertion. on general examination she was thin built, poorly nourished and pale. On auscultation, vesicular breath sounds reduced in intensity on left infra axillary /infra scapular areas. with clinical suspicion of pleural effusion Chest x ray was done with abdominal shield showed left sided moderate effusion(Figure 1).Ultrasound guided thoracocentesis was performed and pleural fluid was sent for cytopathology and biochemical analysis. Based on reports it was exudative effusion with low ADA. Her hemogram showed pancytopenia. On detailed history she also complained of recurrent oral ulceration and photosensitivity.

Hence ANA was sent to rule out SLE.ANA was strongly positive which was later confirmed with Ds DNA and Anti smith antibodies. Pleural fluid ANA was also sent which was reported as positive.

Physician opinion was sent and she was started on steroids(Prednisolone).Following which patient showed significant improvement with her symptoms and discharged with advice to follow up.

Discussion

Symptomatic Pleural effusions are not so common in pregnancy. However small insignificant pleural effusions in antenatal mothers were reported in previous studies. Clinical symptoms and signs are subtle initially which leads to delay in diagnosis. Common causes of pleural effusions in antenatal women include Tubercular effusion, Parapneumonic effusions, Pulmonary embolism, Effusions due to underlying Connective tissue disorders, Effusions due to Cardiac/Renal failure.Rare causes include Malignant pleural effusions and effusion in Ovarian hyperstimulation syndrome.

Usually presents with pleuritic chest pain ,dry cough and associated constitutional symptoms which includes fever ,weight loss, generalised malaise. Detailed history and physical examination is mandatory to narrow down the etiology. Chest radiograph is one of the simple and initial investigation often used to diagnose pleural effusion. But in antenatal mothers its not usually performed considering the radiation hazards to the fetus. In special circumstances, chest radiograph can be performed with Abdominal shield. Best modality for the diagnosis of pleural effusion in antenatal mothers is bedside ultrasound of thorax. It can be easily performed by physicians without any radiation hazard and also very sensitive for the detection of minimal pleural collections.

Diagnostic thoracocentesis is usually performed under USG guidance to avoid complications. Pleural fluid is generally sent for biochemical, microbiology and cytopathogical analysis. Biochemical tests includes protein, glucose, Lactate dehydrogenese levels, Adenosine deaminase (ADA)levels are usually sent for analysis. Pleural fluid gramstain, culture, Acid fast smear and special stains in certain cases are sent when we suspect pleural sepsis/Pleural TB. Pleural cytology and cell block are sent to explore ongoing pathology.

In our case series in Case 1,Patient presented to us with left sided pleuritic chest pain and other constitutional symptoms. she also had multiple cervical adenopathy Pleural fluid analysis was diagnostic for Tubercular pleural effusion. Patient was started on Antituberculer drugs HRZE(Fixed dose regimen)under DOTS. All the first line drugs can be initiated for antenatal mothers except for streptomycin considering its vestibulonuclear toxicity. Extrapulmonary TB is the presenting issue in approximately 25% of adults globally, with lymph nodes and the pleura being the most common sites of disease[3]. Until recently, effusions related to TB were largely thought to be an immunological phenomenon; however, current diagnostic techniques frequently enable the isolation of TB from the effusion and pleura, suggesting that effusions are commonly the result of paucibacillary mycobacterial infections of the pleural space[4].TB pleural effusions often spontaneously resolve, leaving a thickened pleura[5] however, up approximately two-third of patients will go on to develop active TB[6]. The gold standard for diagnosis remains identification of MTB bacilli in the pleural fluid, sputum or pleura. However, pleural TB often presents a diagnostic challenge, with positive pleural fluid culture in only 40% of cases[7].

In case 2, She was multigravida with poorly controlled Diabetes as comorbidity presented to our centre with clinical features of community acquired pneumonia with parapneumonic effusion. Pleural fluid reports were suggestive of pleural sepsis and categorised as complicated parapneumonic effusion as per lights classification. Hence Intercoastal drainage of effusion was carried out with 14 F pig tail. Patient was also started with broad spectrum antibiotics and other supportive measures. Patient got symptomatically improved and discharged from our centre. Diagnosing Para pneumonic effusions(PPE) is not complex in patients presenting with classic symptoms, which are similar to pneumonia[8]. A poor response to pneumonia therapy could suggest the presence of a PPE or empyema as a complication of the disease[9]. Blood cultures are only positive in 12% of cases, PF culture is negative in more than 40% of samples and, occasionally, the microorganisms responsible are very rare and can only be identified by molecular microbiology[10]. Treatment is based on controlling infection with appropriate antibiotics, draining the PPE/empyema, assessing the use of fibrinolytics and existing surgical options, ensuring good nutrition, and administering anti-thrombotic prophylaxis[11].

In Case no 3,Patient presented with clinical features of Right pleurisy. Chest radiograph was suggestive of right sided minimal pleural effusion.ECG and Echocardiogram were suspicious of Pulmonary thromboembolism which was later confirmed by MR angiogram. Patient was started on anticoagulants and was further assessed to rule out inherited thrombophilia. Later she was found to have Leiden V mutation. Prior to the most recent Royal College of Obstetricians and Gynaecologists (RCOG) 2015 Green-top guidelines, it was suggested that all pregnant women with suspected pulmonary embolism should undergo bilateral duplex ultrasound scanning of the lower limbs prior to any objective testing for pulmonary embolism. This was because treatment for both conditions (DVT and pulmonary embolism) is the same and so if a DVT was detected on ultrasound, then it would avoid

further testing and subsequent radiation exposure to both mother and fetus from either *V′/Q′* or CTPA scanning.Most of the centres will proceed with *V′/Q′* scanning as the initial investigation given the low incidence of comorbid pulmonary disease in pregnancy, lower breast cancer risk and similar negative predictive values/low rates of uninformative imaging (*i.e.* poor image quality on CTPA or intermediate probability on *V′/Q′* scanning), when compared with CTPA (negative predictive value of 100% and 98%, respectively.

In case 4, Patient came with history suggestive of left sided pleural effusion later diagnosed to have Lupus effusion.she was started on corticosteroids and other supportive measures. With its wide spectrum of clinical manifestations and health consequences, SLE further jeopardizes pregnancy in terms of fetal and maternal health [12]. Though it is predominantly diagnosed in women of childbearing age, but it was also reported in antenatal mothers[13]. Reports of lupus effusion in pregnancy is scarce as per literature. As these patients are immunocompromised need to rule of other infectious etiologies as the potential cause for pleural effusion. In addition the risk of Pulmonary embolism in patients with acute Lupus is considerably high which can also present as hemorrahagic pleural effusion.

Conclusion

Pleural diseases in pregnancy may threaten maternal and fetal lives. However, if the conditions are well managed by multi-disciplinary teams the outcomes may be favourable. It is incumbent upon clinicians caring for pregnant women to be alert to distinguish between pathology and normal physiology in pregnancy so that pregnant patients receive appropriate timely interventions. Repeat clinical examinations and imaging are needed to check for disease resolution or recurrence.

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