

Clinical profile of pregnant women with community acquired pneumonia attending tertiary care hospital

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Abstract

Introduction: Community acquired pneumonia (CAP) is recognized as a common problem that carries a substantial morbidity and mortality in preantibiotic era. With the advent of newer diagnostics and advanced antimicrobials there is reduction in morbidity and mortality, but in era of MDR pathogens its often difficult and challenging to manage CAP. However, pneumonia in younger individuals can be severe and fatal. Pneumonia in the pregnant patient is the most frequent cause of life threatening non-obstetric infection.

Aims and Objective: The aim of this study was to assess the pattern of community acquired pneumonia among pregnant women in tertiary care hospital.

Materials and Method: 32 pregnant ladies presented with signs, symptoms & radiological findings consistent with community acquired pneumonia were selected from out patient's clinics of obstetrics and gynecology department.

Results: The present study included 32 pregnant ladies with community acquired pneumonia, who were selected from out patient's clinics of obstetrics and gynecology department. Their ages ranged from 20–40 years old with mean age of 25.32 years old (± 4.20 SD). Cough (90%) was the most common symptom followed by fever (70%) among the patients. Chest x ray done with abdominal shield showed pulmonary infiltrates in (65%). The most common radiological findings are consolidation (75%) nodular infiltrates (20%), cavity (3%), pleural effusion (2%). The most common organisms isolated were streptococcus pneumonia, hemophilus influenza, staphylococcus aureus mycobacterium tuberculosis.

Conclusion: Morbidity and mortality in pregnant patients with pneumonia continue to pose a significant challenge. Early recognition of the diseases process and appropriate antibiotic treatment are required to ascertain an optimal outcome. The treatments in the gravid patients generally follow standard guide lines for the treatment of pneumonia in adults. Concern for fetal outcome should not delay any treatment strategies as improvement in maternal oxygenation and status is the best way to ensure fetal protection.

Keywords: Pneumonia, Pregnancy.

Introduction

Community acquired pneumonia (CAP) is recognized as a common problem that carries a substantial morbidity and mortality in preantibiotic era. With the advent newer diagnostics and advanced antimicrobials there is reduction in morbidity and mortality but in era of MDR pathogens its often difficult and challenging to manage CAP. CAP usually affects people at the extremes of age and while the occurrence of CAP in young adults is uncommon.¹ However, pneumonia in younger individuals can be severe and fatal. Pneumonia in the pregnant patient is the most frequent cause of fatal non-obstetric infection.

Considering the potential teratogenicity of radiography and drugs, both patients and their physicians tend to postpone radiation examinations and medical treatment when pneumonia is suspected. As a result, delayed diagnoses and referral are common in patients with pneumonia complicating pregnancy.^{2,3} Several physiological and immunological changes that are experienced during pregnancy, such as altered T lymphocyte immunity, increased oxygen consumption, decreased functional residual capacity, decreased chest compliance, and increased risk of aspiration, may predispose pregnant

women to a more severe course of pneumonia, which may result in greater maternal and fetal morbidity and mortality.⁴

Alterations in cellular immunity have been widely reported and are aimed primarily at protecting the fetus from the mother. These changes include decreased lymphocyte proliferative response, especially in the second and third trimesters, decreased natural killer cell activity, changes in T cell populations with a decrease in numbers of circulating helper T cells, reduced lymphocyte cytotoxic activity, and production by the trophoblast of substances that could block maternal recognition of fetal major histocompatibility antigens.⁵

Often there are difficulties in diagnosis of CAP during pregnancy reflect the complexity of differentiating between symptoms related to physiological changes and more sinister symptoms of disease. Patients themselves may attribute symptoms of pneumonia to pregnancy and hence usually present late to the clinicians. Chest discomfort may also occur in the later stages of pregnancy, possibly due to the mechanical effects of the uterus on the diaphragm. It may be difficult to distinguish it from other causes of chest discomfort.⁶

Aims and Objectives

The aim of this study was to assess the pattern of community acquired pneumonia among pregnant women in tertiary care hospital.

Materials and Methods

32 pregnant ladies presented with signs, symptoms & radiological findings consistent with community acquired pneumonia were selected from out patient's clinics of obstetrics and gynecology department. All the patients were subjected to the following:

The diagnosis of CAP was based on the presence of common clinical features (e.g., cough with expectoration, fever, shortness of breath, and pleuritic chest pain) along with radiological features consistent with pneumonia (chest radiography). Thorough clinical examination was done in the OPD/IPD to establish the diagnosis of community acquired pneumonia and to exclude any other chest diseases.

A chest radiograph was required for the routine evaluation of patients who were likely to have pneumonia, to establish the diagnosis. But, It is estimated that radiation doses to the mother from a standard departmental posteroanterior chest radiograph, performed with a grid to reduce scatter and a peak voltage for the beam of 90–120 kV, is 5–30 m Rad. The absorbed dose for the uterus and fetus is 100 times less (about 300 μ Rad).³ Complete blood count including total count differential count, liver function test, renal function tests were done for all the patients. Pretreatment sputum samples were obtained from all patients. Good quality samples (having fewer than 10 squamous epithelial cells and more than 25 neutrophils per low power field) are subjected to the followings:

1. Direct smear stained with Gram stain and Ziehl Neelsen stain (to detect acid fast bacilli).
2. Aerobic culture for bacteria using conventional culture media: blood agar, chocolate agar, MacConkey agar and Lowenstein Jensen media.

Statistical Methods

All data were collected, summarized, and analyzed by using an appropriate statistical package program (Epi info software). For quantitative data which were normally distributed and summarized by mean and standard deviation. For qualitative data were summarized by number and percentage.

Results

The present study included 168 pregnant ladies with community acquired pneumonia, who were selected from out patient's clinics of obstetrics and gynecology department. Their ages ranged from 18–42 years old with mean age of 25.32 years old (± 4.20 SD) cough (93.75%) was the most common symptom followed by fever (78%) among the patients. Chest X ray done with abdominal shield showed pulmonary infiltrates in (96.8%). The most common radiological findings are consolidation (87.5%) nodular infiltrates (31.25%), cavity (15.6%), pleural effusion (12.5%). The most common organisms isolated were

streptococcus pneumonia, hemophilus influenza, staphylococcus aureus mycobacterium tuberculosis.

Table 1: Symptomatology among the pregnant patients diagnosed with CAP

History	N=Number	Percentage %
Fever	25	78%
Cough	30	93.75%
With expectoration	26	81.35%
Breathlessness	8	25%
Chest pain	5	15.62%
Wheezing	4	12.5%
Hemoptysis	2	6.25%

Table 2: Radiological findings

Chest x ray findings	Number=n	Percentage %
Consolidation	28	87.5%
Nodular infiltrates	10	31.25%
Cavity	5	15.62%
Pleural effusion	4	12.5%
normal	1	3.12%

Table 3: Prevalence of microorganisms in studied pregnant ladies with CAP

Organisms	Number =n	Prevalence %
Streptococcus pneumonia	13	40.6
Hemophilus influenza	3	9.3
Staphylococcus aureus	2	6.2
Mycoplasma pneumonia	1	3.1
Kleibella pneumonia	2	6.2
Mycobacterium tuberculosis	3	9.3
Pseudomonas aeruginosa	2	6.2
No organisms isolated	6	18.75

Discussion

Community acquired pneumonia (CAP) is recognized as a common problem that carries a substantial morbidity and mortality. The burden of disease falls mainly on people at the extremes of age and the occurrence of CAP in young adults is uncommon. Nevertheless, pneumonia in young adults can be severe and fatal.⁷ Pneumonia the pregnant patient, pneumonia is the most frequent cause of fatal non-obstetric infection.⁸

Alterations in cellular immunity have been widely reported and are aimed primarily at protecting the fetus from the mother. These changes include decreased lymphocyte proliferative response, especially in the second and third trimesters, decreased natural killer cell activity, changes in T cell populations with a decrease in numbers of circulating helper T cells, reduced lymphocyte cytotoxic activity, and production by the trophoblast of substances that could block maternal recognition of fetal major histocompatibility antigens.⁸

In addition, hormones prevalent during pregnancy-including progesterone, human chorionic gonadotropin, alpha-fetoprotein and cortisol-may inhibit cell mediated immune function. These changes could theoretically

increase the risk from infection, particularly by viral and fungal pathogens.⁹

Mortality of 5.7% was reported in a BTS multicentre study of hospitalized adults aged 16–74 years compared with 0–1% in young ambulatory adults with CAP. Mortality from pneumonia in pregnancy is similar to rates in non-pregnant adults.¹⁰

In our study 32 pregnant women with community acquired pneumonia were included from out patient's clinics of obstetrics and gynecology department of our institute. Their ages ranged from 18–42 years old with mean age of 25.32 years old (± 4.20 SD).

Regarding the symptoms of the 32 pregnant ladies, there was 25 cases complaining of fever (78%), cough was present in 30 cases (93%), sputum production was present in 26 cases (81%), dyspnea was present in 8 cases (25%), pleuritic chest pain was present in 5 cases (15%), wheezing in 4 (12%) and hemoptysis in 2 (6%) patients.

In agreement with Halm and Teristein,¹¹ who stated that, the evaluation of community acquired pneumonia is initiated based on patients symptoms of bacterial pneumonia in pregnancy are the same as in nonpregnant individuals. Mild upper respiratory complains preceding symptoms that include cough in more than 90%, sputum production in 66%, dyspnea in 66% and pleuritic chest pain 50%, and non respiratory symptoms including headache, fatigue, myalgia, sweat and nausea. Also Kasper et al. stated that, clinical symptoms of pneumonia including fever, cough, pleuritic chest pain, rigors, chills, and dyspnea. During pregnancy 59.3% of patients reported cough, 32.2% shortness of breath and 27.1% reported pleuritic chest pain.¹²

Chest X ray radiography was done in all cases to establish the diagnosis and to exclude any other chest diseases. Within normal CXR was present in only one case (3%), consolidation was found in 28 cases (87.5%), nodular infiltrates was detected in 16 cases (31.25%), cavity was found in four cases which was mild (15.6%), pleural effusion was detected in 4 cases (12.5%) (Table 1). J.S. Sheffield, F.G. Cunningham et al stated that CXR performed in patients in whom pneumonia is suspected lobar consolidation, cavitations and pleural effusion are shown in typical bacterial lobar pneumonia.¹³

Our results showed that, *S. pneumonia* in 13 cases (40.6%) was the most common organism followed by *H. influenza* in 3 cases (9.3%), *M. pneumonia* in 1 case (3.1%), *Staphylococcus aureus* in 2 cases (6.2%), *K. pneumonia* in 2 cases (6.2%), *P. aeruginosa* in 2 cases (6.2%), *M. tuberculosis* (TB) was found in 3 cases (9.3%), And in 6 cases of microbiological analysis showed No bacteriological agent (18.75%). In concordance with Lim et al., 2003, who found the most common bacterial agent identified in pregnancy include streptococcus pneumonia in 17% of cases and *H. influenza* identified in 6% of cases. Also in agreement with who found the most common single pathogen is streptococcus pneumonia which is responsible for 30–50% of identified cases followed by *H. influenza* and *M. pneumonia*.¹⁴

Conclusion

Morbidity and mortality of community acquired pneumonia in pregnancy poses a significant challenge. Early recognition and prompt treatment with adequate antibiotic coverage is required to certain an optimal outcome. The treatments in the gravid patients generally follow standard guide lines for the treatment of pneumonia in adults. Although concern for fetal outcome should not delay treatment as improvement in maternal oxygenation and status is the best way to ensure that fetus will be protected.

Conflict of Interest: None.

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