Case report

A case study of polymicrobial pneumonia

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Abstract

A 34-year old woman, presented with high grade fever and productive cough for 10 days. She had history of recurrent lower respiratory tract infections for past four years. Her serial chest X-ray showed evidence of fleeting pneumonitis. She was tachypnoeic at rest but general examination was otherwise normal. Chest X-ray showed homogenous opacity in right lower zone. She was treated with piperacillin-tazobactam, clindamycin, azithromycin, bronchodilators and other supportive measures. Computerised tomography scan of the thorax showed multifocal areas of ground glass attenuation with inter lobular septal thickening in both lungs. Bronchial wash specimen for PCR analysis was positive for *Staphylococcus aureus*, *Enterococcus species*, *Herpes simplex nuis*, *Cardida species*, *E coli* and *Pseudomonas arrogia*. She was then started on acyclovir and voriconazole for one week. Repeat chest X-ray after one week showed radiological clearance. Patient became afebrile and improved symptomatically.

Keywords: Candida, fleeting pneumonitis, herpes simplex nuis, polymicrobial.

Case report

A 34 year old woman was admitted to hospital with complaints of high grade fever and productive cough for 10 days. She was not a known diabetic, asthmatic or hypertensive. She had no history of exposure to animals, prior history of antitubercular treatment or history of smoking.

The patient had treatment for this episode with intravenous antibiotics but still symptoms persisted. She had history of recurrent lower respiratory tract infections for the past four years. Her serial chest X-ray showed evidence of fleeting pneumonitis.

On examination, the patient was febrile and tachypnoeic at rest. General examination was otherwise normal. Respiratory system revealed inspiratory crackles in the right hemithorax. Examination of other systems was normal. Her temperature was 101°F. Blood investigations were normal except for elevated ESR and C-reactive protein (CRP). Chest X-ray showed homogenous opacity in right lower zone *(Figure 1)*. CT-thorax showed multifocal areas of ground glass attenuation with interlobular septal thickening in both lungs *(Figure 2, 3)*. Tests for HIV antigen and antibody were negative. She was empirically started on piperacillin-tazobactam, dalacin, azithromycin, bronchodilators and other supportive measures.

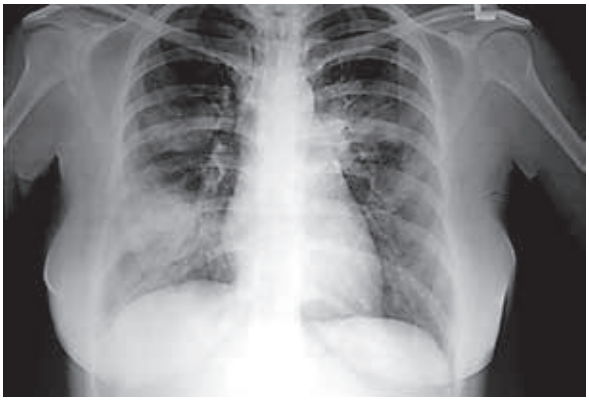

Figure 1: Chest X-ray showing opacity in the right lung suggestive of pneumonia

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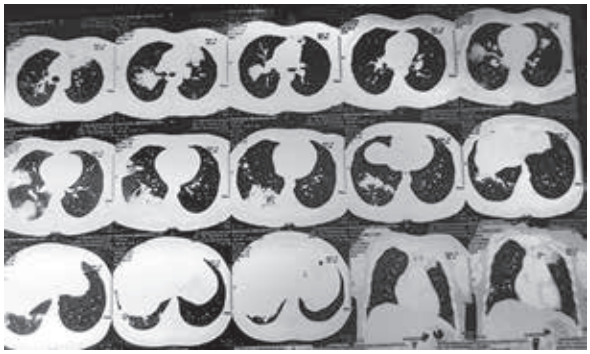

Figure 2: CT scan of the chest – Cross section showing right sided pneumonia

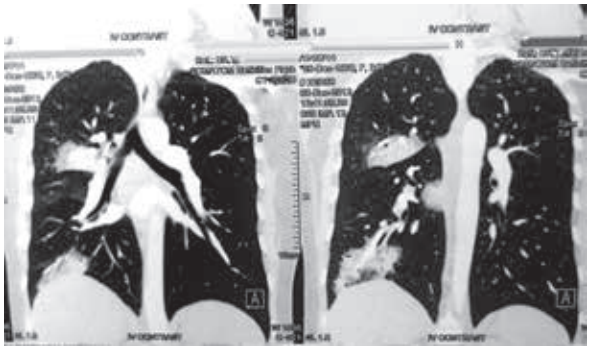

Figure 3: CT scan of the chest – Longitudinal section showing right sided pneumonia

The patient continued to have fever. Bronchoscopy was done and revealed no endobronchial lesion. Bronchial wash for polymerised chain reaction (PCR) analysis showed multiple organisms. Bronchial wash specimen for PCR analysis was positive for *Staphylococcus aureus*, *Enterococcus species*, *Herpes simplex nuis*, *Candida species*, *E coli* and *Pseudomonas arrogia*.

She was then started on Tab Acyclovir and Tab Voriconazole for one week. Repeat chest X-ray after one week showed radiological clearance. The patient became afebrile and improved symptomatically.

She was discharged with antibiotics, antifungal, antiviral drugs and reviewed after 10 days. Repeat chest X-ray after one month showed complete resolution of opacities.

Discussion

Herpes simplex virus (HSV) pneumonia occurs in patients with complication of immunosuppression or airway injury. HSV pneumonia is usually caused by HSV type 1 virus than type 2 virus.[1,2]

HSV is most common in immunosuppressed individuals but it has been reported in immunocompetent individuals also.[3]

HSV infection usually in more than one-half of the patients had concomitant pulmonary infection with other microorganisms, including bacterial, candidal and Aspergillus species, and Cytomegalovirus.

Lower respiratory tract infection with HSV either presents as focal necrotising pneumonitis or as disseminated pneumonia. Necrotising pneumonia can be extension of herpetic tracheobronchitis. Disseminated pneumonia occurs due to haematogenous dissemination from oral or genital mucocutaneous disease.

CT shows predominantly ground-glass attenuation, airspace consolidation and centrilobular nodules.[4]

Clinically, the patients have fever above 38.5°C, cough, dyspnoea, hypoxaemia and mucocutaneous lesions, which appear after or at the same time.[5] Specific pathological features include intranuclear inclusion bodies on haematoxylin eosin stain (Cowdry A inclusion bodies).[5]

The diagnosis of HSV pneumonia is usually based on cytological and histological findings and confirmed by viral culture or serological methods. Tissue culture is the most sensitive and specific diagnostic test.[6]

Pathologically, HSV infection is located mainly in the trachea and large bronchi, and manifested by focal or diffuse ulcers and deposits of fibrinous exudate. Parenchymal involvement is characterised by nodular or confluent necrotic foci in the lung, with ghost of alveolar septa and eosinophilic, proteinaceous exudate containing necrotic neutrophils and cellular debris.[7] Cytological features characteristic of HSV infection can be located at the margins of ulcers or in the alveolar cells. They include small eosinophilic intranuclear inclusions separated from the surrounding nuclear chromatin by a clear halo (Cowdry type A inclusions), and single or multinucleated cells with ground-glass changes

in the nuclei involved.[6,8] Diagnosis can be confirmed by a significant rise in HSV antibody titres.

Treatment of HSV pneumonia consists of acyclovir (800 mg orally, 5 times a day, for one week, or 10–15 mg/kg, thrice a day for one week) is considered to be the treatment of choice.[6] When given early, it alters the course of infection, improving the survival and shortening the evolution.

Conclusion

This case illustrates pneumonia caused by multiple organisms must be suspected even in immunocompetent individuals presenting with recurring pneumonia unresponsive to antibiotics. A bronchial wash specimen followed by culture or PCR would be indicated to focus on the optimal treatment.

References

1. Aquino SL, Dunagan DP, Chiles C, Haponik EF. Herpes simplex virus 1 pneumonia : patterns on CT scan and conventional chest radiographs. *J Comput Assist Tomogr* 1998; **22**: 795-800.
2. Gasparetto EL, Escuissato DL, Inoue C, Marchiori E, Muller NL. Herpes simplex virus type 2 pneumonia after bone transplantation : HRCT findings in 3 patients. *J Thorac Imaging* 2005; **20**:71-3.
3. Herpes simplex pneumonia in a young immunocompetent man. E. Martinez, A. de Diego, A. Paradis, M. Perpina, M. Hernandez. *Eur Respir J* 1994; **7**:1185–8.
4. Herpes simplex virus pneumonia: high – resolution CT findings S Chong, T S Kim, E Y Cho. *Br J Radiol* 2010; **83**(99):585-9.
5. Sherry MK, Klainer As, Wolff M, Gerhard H. Herpetic tracheobronchitis. *Ann Intern Med* 1988; **109**:229–33.
6. Straus SE, Rooney JF, Sever JL, Seidlin M, NusinoffLehrman S, Cremer K. Herpes simplex virus infection: biology, treatment and prevention. *Ann Intern Med* 1985; **103**:404–19
7. Nash G, Foley FD. Herpetic infection of the middle and lower respiratory tract. *Am J Clin Pathol* 1970; **54** :857–63.
8. Graham BS, Snell JD. Herpes simplex virus infection of the adult lower respiratory tract. *Medicine* 1983; **62**:384–93.