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CASE REPORT

Enterococcal-associated respiratory tract infection in dermatomyositis

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ABSTRACT

This is to report a rare case of enterococcal pneumonia and pleural effusion in a 32-year-old woman with severe and active dermatomyositis. She developed fever, respiratory failure, and pleuritic chest pain for 12 days before admission to our hospital. Chest X-ray showed increased overall density of the right hemithorax, indicative of pleural effusion and consolidation with air bronchogram. Cultured pleural drainage revealed growth of Enterococcus faecalis. The patient was treated with imipenem and intravenous immunoglobulin (IVIG) and corticosteroid and the patient's response to treatment was very good. Chest radiography and chest (computed tomography) CT scan after treatment was quite clear. Enterococci rarely cause pneumonia and plural effusion in general population but it can be concluded that in patients with inflammatory myopathic disease who are treated with immunosuppressive drugs may be a factor of respiratory tract infection.

Key words: enterococcus faecalis, pleural effusion, dermatomyositis, opportunistic infection, immunosuppression

INTRODUCTION

Polymyositis (PM) and dermatomyositis (DM) are systemic inflammatory disorders affecting skeletal muscles and other organs.[2-4] PM and DM are considered to be associated with high morbidity and mortality rates, primarily related to life-threatening muscle weakness, cardiac and lung impairment, as well as infectious manifestations.[1–5] In clinical series of patients with PM/DM, infectious complications have been described in up to 26% of patients.[4, 6]

Several factors may be implicated in this apparent increased frequency of infections in PM/DM patients, particularly on immunosuppressive medications. In addition, immune system dysfunction, due to PM/DM itself, may lead to elevated susceptibility to infections.[1, 3]

The association between PM/DM and opportunistic infections has rarely been described in the literature.[4] As these patients exposed to high doses of corticosteroids and cytotoxic drugs therefore they are prone to many serious infections. Various viral and fungal infections also contribute to the morbidity and mortality associated with these condition. Keeping in mind the possible role of unusual infections might be very helpful. Our patient suffered from pneumonitis and pleural effusion by enterococcal faecalis that is a rare infection in respiratory system without primary focus after abdominal surgery or endocarditic, therefore this case is interesting in this regard. Thus, patients receiving high doses of corticosteroids and immunosuppressive therapy, need to be monitored closely for these infections.

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CASE REPORT

A 32-year-old white woman presented with 12-days history of right-sided pleuritic chest pain. She also had dyspnea, fever and chills, anorexia, cough and tachypnea. The patient was a known case of severe DM with criteria including weakness, elevated muscle enzyme, typical skin lesion (Gottron's papules, malar rash and heliotrope rash), myopathic pattern in electromyography and positive muscle biopsy since 10 months ago. She had received high doses of corticosteroids, hydroxychloroquine and azathioprine and monthly IVIG for 6 courses. She had no history of urinary tract infection or abdominal surgery in the past. On examination, the oral temperature was 38.1◦C and the chest wall was dull to percussion with diminished breath sounds at the base of right lung. Proximal muscle forces was 3/5 in upper and lower extremities. The rest of the examination was unremarkable. Chest radiography showed right pleural effusion (Fig. 1).

Laboratory data were notable for an elevated leukocyte count of 12,000 × 10^3 / µL with 90% of polymorphonuclears (PMN), and an erythrocyte sedimentation rate (ESR) of 40 mm/h (normal, 0 -15 mm/h), CRP +2, CPK 853 (normal, 450 -100 U/L), LDH 1300 (normal <450 U/L) , ALT 127 (normal 8 -20 U/L), AST 232 (normal 8 -20 U/L). The hemoglobin, platelet count, and basic metabolic profile tests were within normal limits. The aspirated pleural fluid from the right hemithorax was exudative. Pleural fluid analysis

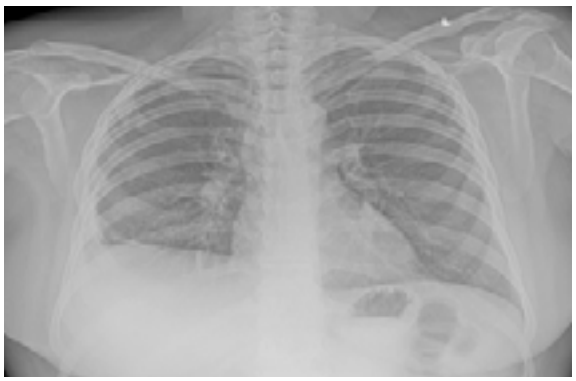

Figure1, Chest x-ray of the taken on admission revealing Right pleural effusion.

is as follows: WBC = 12300 × 10^3 / µL with 76% PMN, Protein= 3.9 gr/dl (with simultaneous serum protein was 6 gr/dl), LDH = 400 (with serum LDH = 480 IU, Glucose = 75 and pH was within normal range). Cultured pleural fluid was positive for Enterococcus faecalis and that was sensitive to linezolid and imipenem. No malignant cells were identified. Blood and urine cultures did not show any growth. Chest CT revealed pleural effusion, consolidation, and air bronchogram. No mass or lymph node was identified (Fig. 2). As the patient had severe muscle weakness, tachycardia, and tachypnea she was given antibiotics (IV imipenem for 3 weeks) and IVIG (400mg/Kg/day for 5 days). As Enterococcus faecalis is an unusual cause of pneumonia and pleural effusion, further investigations to determine the primary focus undertaken, therefore CT scan of the abdomen done and was normal. Trans-esophageal echocardiography was done to rule out endocarditis and no vegetation on cardiac valves. After 3 days, her symptoms were better and fever, chills, dyspnea got improved. Repeated CT scan of lung 3 weeks later showed that pleural effusion and consolidation had been resolved (Fig. 3).

DISCUSSION

Enterococci are gram-positive cocci, which may play a pivotal role in a variety of community- and hospital-acquired infections, the main cause of bacterial infection in the urinary tract, primary bacteremia and endocarditis and lower respiratory tract infections caused by enterococci are very rare.[5] Most humans and animals have enterococci in their intestinal tract. Enterococci, particularly Enterococcus faecalis, are a common cause of endocarditis (5 to 15 percent of community-acquired endocarditis and up to 30 percent of nosocomially-acquired endocarditis) and can be a common cause of nosocomial urinary tract infections (being recovered from up to 15 to 20 percent of UTIs in the hospital setting).[6] Incidence of pleural empyema due to enterococci is only 4% of all enterococcus infections and enterococcal empyema is rare. Most cases were patients who had undergone recent abdominal surgery or were suffering from liver cirrhosis and/or associated peritonitis, while ours does

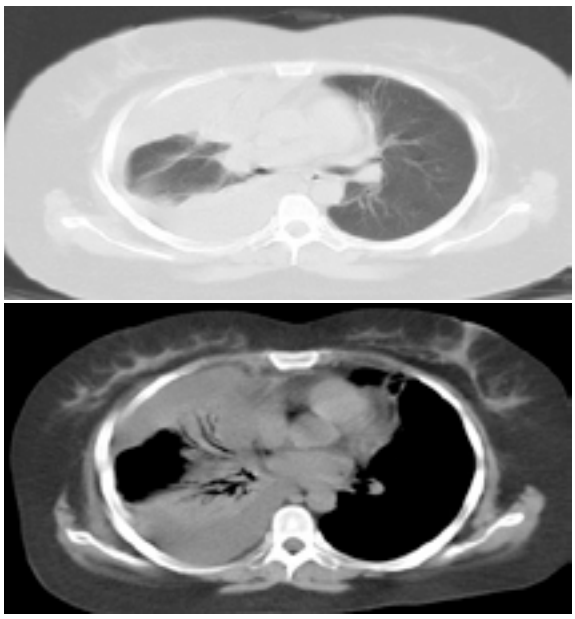

Figure 2, Computed tomography scan of patient's thorax, revealing pleural effusion, consolidation and air bronchogram.

not have this background. The source of infection was reported as endocarditis with spleen abscess in one case and esophago-pleural fistula after pneumonectomy in the other. In the other 28 reported cases, the origin of enterococci was never identified.[7] Inadvertent use of antibiotics has been led to resistant enterococci to several types of antibiotics including aminoglycosides and cephalosporins that may lead to unusual clinical presentations and complications as we described.[8]

Enterococci are the second to third most common organisms isolated from hospital-acquired (nosocomial) infections, particularly in more severely ill patients who have been hospitalized for long period of time and/or have received multiple antibiotics.[9] A significant proportion of enterococci are E. faecium that have been implicated in up to 40 percent of bloodstream isolates in high risk populations such as liver or stem cell transplant recipients.[10] Enterococci also have intrinsic factors such as a number of potential adhesion genes, which may explain the propensity to cause endocarditis.[11]

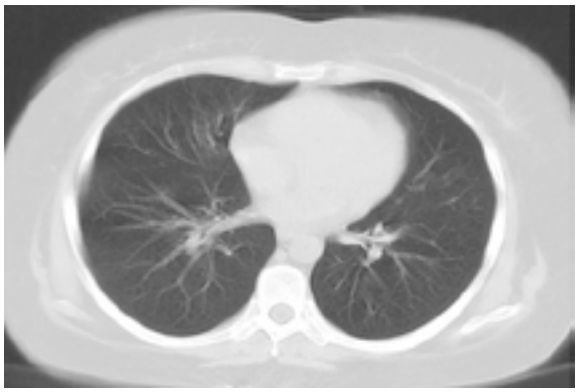

Figure 3, Chest CT after three weeks showing rather normal pattern.

CONCLUSION

Enterococcal-associated lower respiratory tract infections are rarely reported, but may be underestimated. Physicians should consider their occurrence in severe or non-resolving cases of pneumonia.

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