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Case report

GARENOXACIN IN DIFFICULT TO TREAT LUNG ABSCESS – A CASE STUDY REPORT

Ghosh CK¹, *Hajare A², Krishnaprasad K², Bhargava A²

¹Consultant Pulmonologist, City Life Hospital & Dumdum Medical Centre, Kolkata

²Medical Services, Glenmark Pharmaceuticals, Mumbai

*Corresponding author email: anoophajare@gmail.com

ABSTRACT

Lung abscess results from microbial infection causing necrosis of the lung parenchyma leading to one or more cavities. Lung abscesses usually occur in individuals who have a predisposition to aspiration, immunocompromised individuals, patients with long standing illnesses like malignancies, diabetes, chronic lung diseases. Both gram positive and gram negative pathogens are involved in the pathogenesis. Rising incidence of resistant pathogens has added to the burden of treating physicians. Garenoxacin a newer desfluoroquinolone with its broad spectrum of coverage appears to be a suitable fluoroquinolone for the treatment of respiratory tract infections. The case study mentioned below is of pulmonary emphysema with the existing lung cyst going in for secondary infection. The study looks to explain the utility of fluoroquinolones in the treatment of such infections.

Keywords: Garenoxacin, Lung abscess, Pulmonary emphysema, Broad spectrum

INTRODUCTION

Lung abscess refers to a circumscribed area of pus or necrotic debris in the lung parenchyma, which leads to a cavity and formation of bronchopulmonary fistula, an air-fluid level inside the cavity.^{1, 2} These cavities often communicate with large airways, resulting in cough with purulent sputum.³ Previously it was thought that anaerobic bacteria and microaerophilic streptococci are the major aetiological pathogens of lung abscess.⁴ However recent reports have suggested that aerobic bacteria might be chief pathogens of lung abscess.^{5, 6}

On chest X-ray the usual presentation of a typical case of lung abscess is the cavity with or without air-fluid level particularly in the gravity dependent sites of the lung.¹ On CT scan, it is easily recognized as a homogeneous area of low density surrounded by a markedly enhanced well-formed wall.⁷ Necrotizing pneumonia is another disease characterized by the

formation of cavitory lesions of low density without rim enhancement.^{8, 9}

CASE

A male patient aged 60 years weighing 58kgs presented to the doctor with severe cough and fever of 5 days duration. Patient was a known case of pulmonary emphysema with an associated uncomplicated lung cyst from past 20 years. Patient was also a known case of diabetes and hypertension. On examination patient was found to be conscious, well-built and well nourished. Patient had fever of 104°F, respiratory rate of 26 per minute. There was no icterus or generalized lymphadenopathy. On auscultation the air entry was reduced, vesicular sounds along with crepitations and rhonchi were appreciated on the right side. Laboratory investigations suggested normal complete blood count. Sputum examination was negative for acid fast

bacilli. A chest X-ray PA view was advised to the patient. Chest X-ray suggested of thick walled cyst with air fluid level in the right para-hilar region (fig. 1) which made the treating physician to think of secondary infection of the already existing lung cyst.



Fig. 1: Chest X-ray before treatment

The patient was started with a course of Amoxicillin-clavulanate at a dose of 625 mg three times a day for 5 days. After completing the course of the treatment there was no improvement in the symptoms. Hence a chest X-ray was advised which suggested no improvement in terms of resolution of the cystic lesion (fig. 2).



Fig. 2: Chest X-ray post amoxicillin-clavulanate treatment



Fig. 3: Chest X-ray post Garenoxacin treatment

Hence a course of Garenoxacin at a dose of 400 mg once a day (200 mg × 2 tablets OD) was given for 10 days along with Linezolid 600 mg twice a day for 10 days. There was complete improvement in the symptoms. A follow up Chest X-ray was done which revealed diminution of the size of the cyst with clearance of air fluid level inside the lesion (fig. 3).

DISCUSSION

Lung abscess usually occur as a complication of aspiration pneumonia and are polymicrobial infections caused by anaerobic bacterial that are normally present in the mouth. The most frequently isolated anaerobes are *peptostreptococcus spp.*, *fusobacterium* and *prevotella*. Microaerophilic streptococci and viridans streptococci often are present as well. Monomicrobial lung abscess occasionally may be caused by bacteria, including *S. aureus*, enteric gram negative rods such as *klebsiella spp.*, *pseudomonas aeruginosa*, *burkholderiapseudomallei*, *pasteurellamultocida*, group A streptococcus, *H. influenzae* types b and c, *legionella spp.*, *actinomyces spp.*, and *nocardia spp.*³ Chest radiography usually shows a lung cavity with an air-fluid level. Typically the wall of this cavity is thick walled and irregular in shape. Pulmonary infiltrates may be found in the surrounding region. Oral antimicrobials preferred in the treatment are amoxicillin 500 mg every 8 hours, clindamycin 300 to 600 mg every 8 hours and moxifloxacin 400 mg/day.³ Usually within a few days of beginning antimicrobial therapy diminution of fever and subjective sense of well-being is seen. Defervescence can be expected in 7 to 10 days. Radiographic improvement may lag well behind clinical cure. The median time to cavity closure is 4 weeks and surrounding infiltrates may take twice the time to resolve. This particular case was secondary infection of the preexisting long standing uncomplicated lung cyst ending up in the lung abscess. Since most of the lung abscesses are due to polymicrobial infection, the need of the hour would be to choose an anti-infective with a broader spectrum of antimicrobial coverage. Garenoxacin, a newer quinolone with its significantly broader spectrum of activity appears to be an ideal antibiotic for treatment of difficult to treat or resisting infections. This broader spectrum of activity is attributed to the unique structure of Garenoxacin.¹⁰

CONCLUSION

Garenoxacin is a novel oral des-fluoro(6) quinolone with potent antimicrobial activity against common respiratory pathogens, including resistant strains. Garenoxacin appears to be a suitable option for the treatment of resistant or difficult to treat infections. Garenoxacin possesses potent activity against multidrug-resistant bacteria, especially quinolone-resistant *S. pneumoniae* and other major community pathogens including *M. pneumoniae* and *C. pneumoniae*.

Conflict of interest: Nil

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