Letter to the Editors

Haemoptysis associated with gatifloxacin in a 27 year old male asthmatic – a case report

Varun Gupta,¹ Waseem Rizvi,¹ Khurshid A. Dar,² Rakesh Bhargava² & Anil Kumar¹

Departments of ¹Pharmacology and ²Respiratory and Chest Disease, J. N. Medical College, Aligarh Muslim University, Aligarh (UP), India

Gatifloxacin is a 8-methoxyfluoroquinolone antimicrobial with an extended spectrum of antimicrobial activity. It was approved for use in the United States in 1999 and was introduced in India in October 2001. The drug is approved for use in the treatment of various respiratory infections including bronchitis, urinary tract infections and gonorrhoea [1]. We report a case of haemoptysis associated with gatifloxacin.

A 27 year old male patient, known to have bronchial asthma which was well controlled, attended the Respiratory and Chest Diseases outpatient department with the complaint of frank blood in the sputum. He had had a cough and mucopurulent sputum for the last 10 days. On the fourth day of cough he took gatifloxacin 400 mg (Gat-kind, Mankind India) once daily (self medication being a doctor) for 5 days. The symptoms of cough and sputum improved but he had a bout of frank haemoptysis on the fifth day of the treatment for which he presented to the physician. The drug was stopped and thereafter, no episode of haemoptysis occurred. There was no history of violent coughing or any concomitant medication. On examination bilateral breath sounds were present and no added sounds were heard. Spirometry was performed and FEV₁ was found to be more than 80% of the predicted value. The chest X-ray showed no significant finding. Bleeding and clotting times were in the normal range. Complete blood count was not available. The diagnosis of bronchitis was made as the patient had symptoms consistent with upper respiratory tract infection and normal chest radiograph [2]. There was no history of gatifloxacin intake in the past. The patient provided written informed consent for publication of this report. The case was reported to the zonal centre under the national pharmacovigilance programme.

Although bronchitis is a common cause of haemoptysis [2], in this case the event surfaced when the symptoms of bronchitis were improving. The temporal relationship between the administration of gatifloxacin with the occurrence of the event, and no further episode of haemoptysis

on stopping the drug, also supports that the event could be due to gatifloxacin. There are reports suggesting occurrence of haemorrhage with gatifloxacin [3] and increased risk of bleeding with the concomitant use of warfarin and gatifloxacin [4, 5].

The strength of association was examined using the Naranjo's Adverse Drug Reaction Probability Scale, in which a score of +4 was obtained suggesting a 'possible' link. The Naranjo's algorithm defines adverse reactions as definite (score > 9), probable (score between 5 and 8), possible (1–4) and doubtful (<1) [6].

There could be several possible explanations for gatifloxacin associated haemoptysis. Infection in bronchitis causes superficial mucosal inflammation and oedema which can lead to the rupture of the superficial blood vessels. Gatifloxacin is widely distributed throughout the body into many body tissues and fluids. Rapid distribution of gatifloxacin into tissues also results in high concentrations of gatifloxacin in the respiratory system including the bronchial mucosa [3]. This could probably increase the inflammation of the mucosal cells. This effect coupled with the drug's characteristic to interfere with the coagulation cascade [4, 5] may explain haemoptysis associated with gatifloxacin in patients of bronchitis. This hypothesis needs to be further tested.

In conclusion, gatifloxacin has been approved for use in bronchitis because of its enhanced activity against the respiratory pathogens and high concentration in the respiratory tract [3, 7]. However, in the view of this patient (a doctor) and in the light of previously reported cases of haemorrhage, its use in bronchitis needs to be monitored carefully.

REFERENCES

- 1 Perry CM, Balfour JA, Lamb HM. Gatifloxacin. *Drugs* 1999; 58: 683–96.

- 2 Hirshberg B, Biran I, Glazer M et al. Hemoptysis: etiology, evaluation, and outcome in a tertiary referral hospital. *Chest* 1997; 112: 440.
- 3 Tequin (gatifloxacin). Full Prescribing Information: Bristol-Myers Squibb Company Princeton, USA. 2006. [online] Available at http://www.fda.gov/medwatch/safety/2006/tequin_PI.pdf (last accessed 13 December 2007).
- 4 Mathews S, Cole J, Ryono RA. Anticoagulation-related outcomes in patients receiving warfarin after starting levofloxacin or gatifloxacin. *Pharmacotherapy* 2006; 26: 1446–52.
- 5 Leone R, Venegoni M, Motola D et al. Adverse drug reactions related to the use of fluoroquinolone antimicrobial. *Drug Saf* 2003; 26: 109–20.
- 6 Naranjo CA, Busto U, Seller EM et al. A method for estimating the probability of adverse drug reaction. *Clin Pharmacol Ther* 1981; 30: 239–45.
- 7 Ball P. Quinolone generation: natural history or natural selection? *J Antimicrob Chemother* 2000; 46: 17–24.

RECEIVED

15 January 2008

ACCEPTED

21 February 2008

PUBLISHED OnlineEarly

27 May 2008

CORRESPONDENCE

Dr Varun Gupta, Department of Pharmacology, J.N Medical College, Aligarh Muslim University, Aligarh (UP), India.
Tel/Fax: 09358312925
E-mail: varunpgupta@yahoo.com