Asia Pacific allergy

pISSN 2233-8276 · eISSN 2233-8268

Case Report

http://dx.doi.org/10.5415/apallergy.2012.2.4.280
Asia Pac Allergy 2012;2:280-282

Biphasic anaphylaxis to gemifloxacin

İnsu Yilmaz[1,*], Serkan Doğan[2], Nuri Tutar[1], Asiye Kanbay[1], Hakan Büyükoğlan[1], and Ramazan Demir[1]

[1]Department of Chest Diseases, Faculty of Medicine, Erciyes University, Kayseri 38030, Turkey
[2]Department of Gastroenterology, Faculty of Medicine, Erciyes University, Kayseri 38030, Turkey

Anaphylaxis have been documented as adverse effects of ciprofloxacin, ofloxacin, norfloxacin, levofloxacin, and moxifloxacin. However resistant and biphasic anaphlylactic reactions to gemifloxacin have not been reported to date. Management of severe anaphylaxis in the elderly can be complicated by concurrent medications such as beta (β) adrenergic, alpha (α) adrenergic blockers and angiotensin-converting enzyme (ACE) inhibitors. We report here in the case of a 60-year-old male who was taking on ACE inhibitor, α and β blockers and experienced a severe, resistant and biphasic anaphlylactic reaction to gemifloxacin mesylate.

Key words: Alpha blocker; Beta blocker; Biphasic anaphylaxis; Gemifloxacin; ACE inhibitor

INTRODUCTION

Quinolones have been used for over 30 years to treat a wide range of infections, with nalidixic acid being the first commercialized quinolone. The addition of fluoride to the original molecule produced fluoroquinolones [1]. Based on their chemical structure and antibacterial activity, quinolones can be classified in 4 groups by generation. Gemifloxacin is one of the fourth generation members of this class of antibiotics [2]. Fluoroquinolones are generally safe and well tolerated antibiotics [3]. However, serious and life-threatening adverse events have been reported with fluoroquinolone use [4, 5]. The prevalence of biphasic reactions following anaphylaxis has been reported to be 3-5% [6, 7]. We describe the case of a patient who developed a severe, resistant and biphasic anaphylactic reaction following first-time exposure to gemifloxacin.

CASE REPORT

According to his history, the patient had been diagnosed as having bronchitis with a week history of cough, sputum, and chills and had been prescribed gemifloxacin mesylate 320 mg once-daily by his primary care physician. Five minutes after the first dose, he developed numbness around his mouth, itching particularly localized in the palmar and plantar regions, followed by fainting, clammy sweating, shivering, shortness of breath, dystasia, facial and hand swelling. He was immediately admitted to the emergency department. On admission: his blood pressure was measured as 60/40 mmHg, and his pulse rate was 65 beats/min. Oxygen treatment, and methylprednisolone 80 mg, ranitidine 50 mg, diphenhydramine 25 mg, all intravenously, and rapid intravenous infusion of 0.9% saline, continuous salbutamol by nebulizer and epinephrine 0.3 mg intramuscular

Correspondence: İnsu Yilmaz
Department of Chest Diseases, Faculty of Medicine, Erciyes University, Melikgazi, Kayseri 38030, Turkey
Tel: +90-352-207-6666
Fax: +90-352-437-4931
E-mail: insu2004@yahoo.com

Received : June 30, 2012
Accepted: September 18, 2012

were administered. Epinephrine was repeated three times with a five minute interval (0.3 mg, 0.3 mg, 0.5 mg, respectively). Intravenous vasopressor treatment (Dopamine) was started due to the patient's blood pressure not increasing despite intravenous fluid and intramuscular epinephrine treatment. The patient was then promptly transferred to the intensive care unit in our hospital. On physical examination: body temperature of 37°C pulse rate of 60 beats/min, respiratory rate of 18 breaths/min, blood pressure of 90/60 mmHg and arterial oxygen saturation of 96%. On physical examination, the patient had swelling of the lips, tongue and uvula, conjunctival erythema and decreased chest sound in the bilatheral lung on auscultation. Intravenous fluid and vasopressor (Dopamine 10 µg/kg/min) were continued. Montelukast sodium 10 mg/day and cetirizine 10 mg/day were added. He was taking on angiotensin-converting enzyme (ACE) inhibitor 5 mg/day (30 minutes previously), α and β blockers Carvedilol 12.5 mg/day at bedtime (12 hours previously), and Tamsulosin hydrochloride (12 hours previously). Atropine 0.5 mg (IM) and ipratropium bromide monohydrate 0.5 mg/salbutmol sulfate 2.5 mg by nebulizer were added. Swelling of the lips, tongue, uvula, and conjunctival erythema were relieved; his blood pressure, pulse rate returned to normal within a few hours.

He developed hypotension (blood pressure decreased to 50/30 mmHg) and itching-erythema localized in the palmar region five hours after the first reaction. Epinephrine 0.1 mg/mL (IV) and atropine 0.5 mg (IM) were injected. Methylprednisolone 80 mg (IV), ranitidine 50 mg (IV), and diphenhydramine 25 mg (IM) were administered. Meanwhile, glucagon was prepared. However, glucagon was not injected because the episode was resolved by the intravenous administration of aqueous epinephrined. One hour later, all of his symptoms had resolved and dopamine was stopped because of his experiencing high blood pressure in the following period. He was discharged on hospital day 3.

DISCUSSION

The reaction in our index case was most probably labeled as non IgE mediated anaphylaxis because it occurred with the first exposure to the drug. However, we did not perform a skin prick/intradermal test with gemifloxacin to document IgE-mediated hypersensitivity. Thus, IgE mediated anaphylaxis cannot be ruled out, as the symptoms observed in both reactions are indistinguishable.

Some patient factors increase the risk of severe or fatal anaphylactic episodes. These include age-related factors [8], and some concurrent medications such as α and β-adrenergic blockers and ACE inhibitors. Alpha and beta-adrenergic blockers can hinder the effects of epinephrine. In addition, severe or fatal anaphylactic episodes may be associated with defects in mediator degradation pathways, resulting, for example, in elevated baseline levels of tryptase, histamine, bradykinin (because of low serum ACE activity). Amplifying co-factors also include upper respiratory tract infections and other acute intercurrent infections [9]. The patient had all of the above factors. Therefore, these factors led to difficult anaphlaxis management and reduced response to epinephrine.

Biphasic anaphylaxis in which symptoms recur within 1-72 hours after the initial symptoms have resolved, despite no further exposure to the trigger [10]. In this patient, intravenous epinephrine was injected due to emerging hypotension. After the administration of IV epinephrine his blood pressure returned to normal levels. Patients experiencing hypotension or shock refractory to basic initial treatment, including intravenous fluid resuscitation, require intravenous epinephrine as with this patient. Glucagon was not administered because the patient responded to IV epinephrine. Increased requirement for adrenaline and fluid bolus, less severe respiratory features, slow time to resolution of the initial anaphylactic reaction and oral route of antigen exposure were thought to be associated with biphasic response in this case, consistent with literature.

In conclusion, although anaphylactic reactions are rare adverse effects of fluoroquinolones, clinicians should be aware of this potentially fatal event. If shock is imminent or has already developed, epinephrine needs to be given by slow intravenous route. A severe, resistant, biphasic anaphylatic reaction must queried in cases with an ACE inhibitor, alpha and beta blocker drug history. Glucagon should be kept ready for patients taking an α and/or β-adrenergic blocker who have hypotension and bradycardia and who do not respond optimally to epinephrine and atropine.

REFERENCES

1. Hooper DC, Wolfson JS. Fluoroquinolone antimicrobial agents. N Engl J Med 1991;324:384-94.
2. Rossi C, Sternon J. Third and fourth generation fluoroquinolones. Rev Med Brux 2001;22:443-56.
3. Bertino J Jr, Fish D. The safety profile of the fluoroquinolones. Clin

 http://dx.doi.org/10.5415/apallergy.2012.2.4.280

Ther 2000;22:798-817.
4. Ball P, Stahlmann R, Kubin R, Choudhri S, Owens R. Safety profile of oral and intravenous moxifloxacin: cumulative data from clinical trials and postmarketing studies. Clin Ther 2004;26:940-50.
5. Takahama H, Tsutsumi Y, Kubota Y. Anaphylaxis due to levofloxacin. Int J Dermatol 2005;44:789-90.
6. Douglas DM, Sukenick E, Andrade WP, Brown JS. Biphasic systemic anaphylaxis: an inpatient and outpatient study. J Allergy Clin Immunol 1994;93:977-85.
7. Brady WJ Jr, Luber S, Carter CT, Guertler A, Lindbeck G. Multiphasic anaphylaxis: an uncommon event in the emergency department. Acad Emerg Med 1997;4:193-7.
8. Alves B, Sheikh A. Age specific aetiology of anaphylaxis. Arch Dis Child 2001;85:348.
9. Sampson HA, Muñoz-Furlong A, Campbell RL, Adkinson NF Jr, Bock SA, Branum A, Brown SG, Camargo CA Jr, Cydulka R, Galli SJ, Gidudu J, Gruchalla RS, Harlor AD Jr, Hepner DL, Lewis LM, Lieberman PL, Metcalfe DD, O'Connor R, Muraro A, Rudman A, Schmitt C, Scherrer D, Simons FE, Thomas S, Wood JP, Decker WW. Second symposium on the definition and management of anaphylaxis: summary report--Second National Institute of Allergy and Infectious Disease/Food Allergy and Anaphylaxis Network symposium. J Allergy Clin Immunol 2006;117:391-7.
10. Simons FE, Ardusso LR, Bilò MB, El-Gamal YM, Ledford DK, Ring J, Sanchez-Borges M, Senna GE, Sheikh A, Thong BY; World Allergy Organization. World Allergy Organization anaphylaxis guidelines: summary. J Allergy Clin Immunol 2011;127:587-93.

http://dx.doi.org/10.5415/apallergy.2012.2.4.280