OBSERVATIONS

Glimepiride-Induced Bronchial Asthma

Case report

A 40-year-old woman who suffered from type 2 diabetes but had no allergies or history of asthma appeared in the outpatient clinic due to dyspnea. She had been diagnosed with diabetes in 2000, and pioglitazone and buformin were initiated in August and December 2004, respectively. However, because her A1C level was still elevated (8.2%), glimepiride (1 mg/day) was added on 3 August 2005. Two hours after taking the medication, she manifested general malaise, and in the evening, further developed wheezing and dyspnea. Her symptoms worsened gradually, compelling her to visit the outpatient clinic on 4 August 2005. The physical examination revealed stridor upon chest auscultation. An arterial blood gas test revealed hypoxemia (PaO_2 62.8 mmHG) without retention of carbon dioxide and also revealed alkalemia. Computed tomography of the chest revealed thickening of the bronchial walls. Intravenous administration of 300 mg hydrocortisone relieved her dyspnea partially, at which point she was admitted to our department. Laboratory tests showed slight elevations in her white blood cell count (11,300/μl) and C-reactive protein level (3.19 mg/dl). Her immunoglobulin E value was 280 IU/ml, and her erythrocyte sedimentation rate was 52 mm/h. Hydrocortisone (600 mg/day) was administered intravenously for 1 week, and afterward prednisolone was administered orally starting at a dose of 30 mg/day but was rapidly tapered to 0 mg/day within a week. Salbutamol sulfate was administered for 14 days, and inhalation of fluticasone and administration of salmeterol were performed for 1 month. The patient's dyspnea, cough, and stridor completely disappeared in 1 week after her admission. Glycemic control was undertaken by means of intensive insulin therapy and the readministration of buformin 21 days after her admission.

Two weeks after the cessation of oral steroids, a drug-induced lymphocyte stimulating test (DLST) against glimepiride was shown to be positive (stimulation index 3.09; reference level <1.8), while DLSTs against pioglitazone, gliclazide, and glibenclamide were negative. Six months after the patient's discharge, a spirometry test revealed that her forced expiratory volume (FEV 1.0) measurements before and after inhalation of salbutamol sulfate were 81 and 80%, respectively, refuting the existence of bronchial asthma due to other causes. After her hospital discharge, this patient has never again experienced any asthma attacks.

The common adverse effect of glimepiride is hypoglycemia (1–3), and some patients show gastrointestinal symptoms, nervous system disturbances, upper respiratory infection, sinusitis, and liver dysfunction (2,3). Hypersensitivity, including eruptions, itching, and photosensitivity, is also reported (3,4); however, no previous report has documented bronchial asthma as an adverse effect of glimepiride. In this report, we describe a case in which glimepiride most likely induced bronchial asthma. Bronchial asthma is generally classified as a type I allergy, and a positive DLST test indicates type IV allergies; thus it is not possible to conclude that the positive DLST test against glimepiride indicates glimepiride-induced asthma. However, there is little doubt she experienced an allergic response to glimepiride. The clinical course, chest computed tomography findings, and negative reversibility test all strongly suggest glimepiride-induced bronchial asthma.

Glimepiride is a popular agent used worldwide for the treatment of type 2 diabetes, but bronchial asthma, potentially fatal if not properly treated, should be recognized as one of its potential adverse effects.

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