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Carmabazepine induced lung injury-A rare case report

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Abstract: In general, any untoward medical occurrence in a patient or clinical investigation subject administered a pharmaceutical product is referred to as an adverse event (AE). AEs in which a causal relationship with a medicinal product is at least a reasonable possibility (i.e., the relationship cannot be ruled out), are referred to as adverse drug reactions (ADRs). Carbamazepine remains a first-line drug for treatment of epilepsy in children and trigeminal neuralgia in adults. A wide variety of side effects have been attributed to its use. Pulmonary complications, including interstitial pneumonitis, were mainly described in adults, and are considered rare side effects. In this report we describe a patient who developed a severe interstitial pneumonitis –acute lung injury, 2 months after starting carbamazepine. A gradual resolution of symptoms and recovery was observed after the drug withdrawal, but 6 months later our patient still has a marked reduction in lung volumes and decreased exercise tolerance.
Keywords: Carbamazepine, Toxicity**,** Interstitial pneumonitis.

INTRODUCTION

Carbamazepine (CBZ) is a drug of choice for treatment of simple or complex partial seizures and generalized secondary seizures in both children and adults [1]. It is also drug of choice in cases of trigeminal neuralgia, A wide variety of side effects have been attributed to its use, including sleep disorders, anorexia, nausea, vomiting, irritability, ataxia and diplopia. While CBZ pulmonary toxicity is rare, interstitial pneumonitis, bronchiolitis obliterans organizing pneumonia, bronchospasm, pulmonary edema and pulmonary nodules have all been reported [5, 6]. In this report we describe the case of a young female who developed an interstitial pneumonitis and following CBZ therapy for trigeminal neuralgia.

PATIENT PRESENTATION

A 32-year-old female was being treated for trigeminal neuralgia with Carmabazepine for a period of 5-6 weeks. She presented to the emergency room (ER) with fever, cough and dyspnea. Chest x-ray revealed a mild interstitial infiltrate, and she was started on a 10-day course of clarithromycin. Since there was no clinical improvement, the patient returned to the ER. Pulmonary auscultation (PA) revealed fine crackles and wheezing bilaterally. She was discharged under Oral bronchodilators and inhaled short acting β2-agonist (salbutamol).

Two weeks later she presented again with fever, non-productive cough, asthenia and worsening dyspnea. On examination she had a marked respiratory distress (tachypnea – 48 cycles/min – nasal flare, intercostal retractions) and hypoxemia (oxygen saturation of 84% in room air). PA again revealed diffuse crackles and wheezes in both lungs. Initial investigations showed hemoglobin of 11, 0 g/dL, white cell count of 7.6×10^9/L (82% neutrophils, 12% lymphocytes), platelet count of 268×10^9/L and a C-reactive protein of 30 mg/L. Chest radiograph demonstrated bilateral interstitial infiltrates. She was admitted under oxygen, ampicillin, oseltamivir, prednisone and salbutamol, with a presumptive diagnosis of swine flu. Blood culture, throat swab for H1N1 and serology for atypical pneumonia were all negative. Computed tomography (CT) of the chest (Fig. 1) revealed multiple cylindrical bronchiectasis in all pulmonary lobes, associated with peribronchial condensations in the upper lobes, a pattern compatible with bilateral interstitial pneumonitis. Steroid dosage was increased and ceftriaxone added to the therapeutic regimen. There was no improvement in the following days, with severe hypoxia and sustained fever. Due to a possible need of admission in an Intensive Care Unit, she was transferred to medicine department (tertiary care hospital).

A gradual clinical improvement was noted with a decrease in the respiratory rate, work of breathing and oxygen requirement. The patient was discharged after 3 weeks, under a dose reduction scheme of prednisone. Six months after CBZ discontinuation, the patient showed signs of improvement. Pulmonary function tests show a restrictive pattern with a Forced Vital Capacity (FVC) of 53%, and a normal FEV1/FVC ratio. She still has

decreased exercise tolerance and some limitation in performing activities of everyday life.

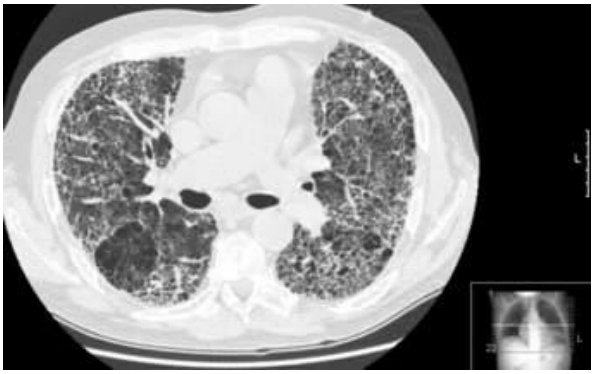

Fig-1: Computerized chest tomography

DISCUSSION

The combination of worsening dyspnea, prolonged fever without improvement, chest CT pattern of interstitial pneumonitis, along with a 2-month interval between the beginning of CBZ and the onset of symptoms, led to the presumptive diagnosis of CBZ hypersensitivity. Furthermore, a gradual resolution of symptoms was observed after CBZ suspension. To our knowledge, this is a rare case report of a patient with an interstitial pneumonitis in association with CBZ therapy.

CBZ-induced interstitial pneumonitis is a rare but well-described complication [5] in adults. The mechanism of lung injury is believed to be an immune-mediated hypersensitivity response [10]. In the present case, the thoracic CT findings and the clinical improvement after CBZ withdrawal, suggest a CBZ-induced interstitial pneumonitis. Despite the gradual improvement after the drug withdrawal, our patient still has some exercise intolerance, probably related to the marked decrease in lung volumes. Various patterns of lung disease months to years after an initial CBZ exposure have been reported before, mainly bronchiolitis obliterans organizing pneumonia and drug induced lupus [5, 6, 11]. Further clinical follow-up along with thoracic CT imaging will reveal any residual lung damage. As drug-induced lung disease occasionally represents a critical life-threatening condition [12-17], we must recognise the adverse effects of drugs. Drug-induced pneumonitis can be diagnosed by the absence of other causes, mainly infectious and environmental, by the favourable outcome after withdrawal of the drug, and by bronchoalveolar lavage findings [17, 18]. Carbamazepine should be added to the list of agents which can induce acute interstitial pneumonitis.

CONCLUSION:

CBZ continues to be a first-line drug for the treatment of epilepsy in children and trigeminal neuralgia in adults. The present report calls attention to the need for clinical follow-up of CBZ-treated patients, due to its various side effects, particularly affecting the lungs. Moreover, concomitant CBZ therapy should always be considered as a cause of interstitial pneumonitis, since CBZ withdrawal is the only effective treatment for further reducing lung injury

Consent: Taken from the patient

Competing interests: We have no competing interests

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