

A Case of Serum Sickness-Like Reaction in an Adult Treated with Omalizumab

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ABSTRACT Omalizumab has been safely used to treat asthma and urticaria. We report a case of serum sickness-like reaction in a patient treated with omalizumab for chronic idiopathic urticaria/angioedema. An adult female experienced episodic urticaria/angioedema without repeatable trigger, ultimately receiving diagnosis of chronic idiopathic urticaria/angioedema. After initial treatment, attempts with escalating cetirizine and montelukast doses were unsuccessful due to sedation; she began treatment with subcutaneous omalizumab 150 mg monthly. Urticaria frequency partially improved after two injections; therefore, the dose was increased to 300 mg after four treatments. Several days after first 300 mg dose, she reported abdominal cramping, fatigue, fever, lymphadenopathy, and arthralgia. Aside from mild thrombocytosis, inflammatory markers were unremarkable, as were evaluations for infection, autoimmunity, and malignancy. Omalizumab was held with eventual improvement in symptoms, which did not return after discontinuation. Omalizumab is a helpful medication in treating atopic conditions, with at least theoretical risk of immune complex formation and tissue deposition causing serum sickness-like reaction. Although early publications showed very low adverse event rates, there have now been reports of serum sickness-like reactions in children and adults treated for asthma and urticaria. Determining true incidence is difficult, given rarity and non-specific nature. Previous reports described symptoms with initiation of medication, reproducible after reintroduction. While it remains to be determined which factors increase risk for serum sickness-like reaction to omalizumab, our report of an urticaria patient who exhibited symptoms with increasing dose contributes insight into the discussion regarding this adverse effect of an otherwise well-tolerated and important medication.

INTRODUCTION

Omalizumab is a monoclonal antibody against the Fc portion of IgE, which has been used effectively to treat atopic conditions such as asthma and chronic idiopathic urticaria. It has been found to be generally safe, though some adverse reactions have been noted. We report a case of serum sickness-like reaction in an adult female on active duty in the US Air Force, who had been treated with omalizumab for chronic idiopathic urticaria/angioedema.

CASE PRESENTATION

A 28-year-old female on active duty was seen for recurrent episodes of urticaria as well as angioedema, which was often random, but also with episodes after various triggers including some fruits, exercise, hot showers, and skin pressure. Tryptase level was normal (5.0 mcg/L) and she had elevated IgE levels to many foods (including watermelon, lemon, and peanut). She was ultimately diagnosed with chronic idiopathic urticaria/angioedema. Initial attempts to treat were with cetirizine and montelukast at escalating doses. Since she was unable to tolerate greater than 20 mg of cetirizine daily due to sedation, she was offered treatment with omalizumab. Treatment was initiated with 150 mg injected subcutaneously every 4 weeks, and some noted improvement in urticaria frequency

after the second injection. After 4 months of treatment, the dose was increased to 300 mg in attempt to further improve control. Several days after receiving the first injection of omalizumab at 300 mg, she reported cramping abdominal pain, fatigue, fever, inguinal lymphadenopathy, and diffuse joint aches. Laboratory evaluation was notable for normal erythrocyte sedimentation rate (4 mm/h) and c-reactive protein (0.793 mg/L), with complete blood count notable for mild thrombocytosis (471,000/mcL). Subspecialist evaluation for infection, autoimmune condition, and malignancy were negative to include lymph node excision and biopsy. With concern for serum sickness-like reaction, omalizumab was held with eventual improvement in symptoms over the next several months. Injections were not resumed and these symptoms did not return.

DISCUSSION

Since its introduction, omalizumab has been a helpful medication in treating atopic conditions, which did not respond adequately to standard treatment methods. Because of its mechanism of action, there was believed to be at least a theoretical risk of immune complex formation, with the possibility of deposition into tissues causing a serum sickness-like reaction. Fortunately, most early reports showed nearly

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identical rates of adverse events in patients treated with omalizumab as compared to control groups, with the majority of symptoms being mild to moderate rashes or infections.¹ However, there have been reports of serum sickness-like reactions in patients treated with omalizumab. It has been difficult to determine the true incidence of these reactions given their rarity and non-specific nature, with some long-term analyses reporting no cases even after study periods of a year or more.² Similarly, eliciting risk factors for the development of the reaction has been challenging, with cases reported in both asthma and urticaria patients, and in both adults and children.³ Some previous reports have described symptom onset with initiation of the medication and shown reproducible findings with reintroduction of the medication.⁴ We report a case of a patient who initially tolerated the medication without issue, but who developed characteristic findings of serum sickness after increase in dose from 150 mg to 300 mg. Some patients have been able to continue treatment with the medication after serum sickness-like reaction, though in our patient, the symptoms were intolerable enough to warrant stoppage of the treatment. While it remains to be determined exactly

which factors increase risk for serum sickness-like reaction to omalizumab, our report of a patient who exhibited symptoms with increasing dose treated for chronic urticaria may contribute some insight into the larger discussion about this adverse effect of an otherwise well-tolerated and important medication.

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