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CASE REPORT

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Desensitization therapy using 'Mariana Castells' protocol in a patient with multiple autoimmune disorders- does it work?

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ABSTRACT

Clinical use of antibiotics is becoming more widespread with each passing day for various infectious diseases. This has caused an abrupt increase in hypersensitivity reactions linked to these drugs, sometimes preventing the use of first-line therapies. In these patients, clinical presentation may vary from mild skin infections to life-threatening anaphylactic reactions. Our patient is a 30 year old female with past medical history significant for mast cell activation syndrome and multiple autoimmune diseases who presented with chief complaint of fever. Patient was diagnosed with MSSA bacteremia requiring the start of an antibiotic regimen. Mariana castells protocol was used for desensitizing the patient before starting her on antibiotic regimen. Patient was desensitized in 2 days using the standard 12-step protocol and started on cefazolin for her long-term treatment of the infection. No acute episodes of drug hypersensitivity were reported. During the course of her hospital admission, she improved significantly with no complications. Our patient having a history of both multiple autoimmune diseases and mast-cell activation syndrome tolerated the protocol well with no complications. Appropriate treatment of the reactions including epinephrine use and management with personalized desensitization protocols can enhance the quality of life, life expectancy, and safety of an increasing at risk population of patients with infectious diseases allergic to their best medications. Protocols, such as mariana castells, are completely safe in autoimmune disorders and should be utilized as the standard of care in appropriate patient population.

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KEYWORDS
Mariana Castells; mastocytosis; autoimmune disorders

1. Introduction

Clinical use of antibiotics is becoming more widespread with each passing day for various infectious diseases. This has caused an abrupt increase in hypersensitivity reactions linked to these drugs, sometimes preventing the use of first-line therapies. In these patients, clinical presentation may vary from mild skin infections to life-threatening anaphylactic reactions. In this situation, rapid desensitization enables selected patients to undergo full treatment schedules without any adverse outcomes. Desensitization for drug allergy is the induction of temporary clinical unresponsiveness to drug antigens. Gradual reintroduction of small doses of drug antigen at fixed time intervals allows for the delivery of full therapeutic doses, protecting patients from anaphylaxis [1]. This permits the use of various antibiotics in severely allergic and critical patient which in turn is a life-saver. One of the best known personal desensitization protocol is the 'Mariana Castells' protocol which was first developed in 2006 which has since played a pivotal role in desensitizing patients with critical illness [1].

Castells MC et al, developed a comprehensive program that evaluates and cares for all patients with adverse reactions to chemotherapy and monoclonal antibodies, as well as antibiotics and new biological therapies [2–5]. It is the only program nationwide to provide standardized desensitizations with a 12-step protocol [3,4]. According to the protocol, patients can receive multiple desensitizations to complete their required therapy cycle and can be desensitized to multiple medications [2–4]. The desensitization protocol provides rapid desensitizations to all patients in need of first-line therapy that has resulted in severe allergic reactions in order to continue treatment [3–5]. The protocol has been used nationally and internationally to desensitize patients who experience reactions to medications [5]. However, the widely used protocol has not been used in patients with multiple autoimmune disorders and the efficacy of the protocol in this set of patients has remained questionable.

2. Case report

Our patient is a 30 year old female with past medical history significant for mast cell activation syndrome (diagnosed 5 years ago) and multiple autoimmune diseases (including Parry-Romberg Syndrome, Ehlers-Danlos Syndrome and Sjogrens Syndrome),

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who presented with chief complaint of fever. During the course of her hospitalization, patient underwent basic labs and imaging studies and was diagnosed with MSSA bacteremia requiring the start of an antibiotic regimen. Patient previously reported no allergies except to cefazolin where she reported to have an anaphylactic skin reaction requiring use of epinephrine, a few years ago. The Internal Medicine and Infectious Disease teams decided to use the mariana castells protocol for desensitizing the patient before starting her on the antibiotic regimen. Patient was desensitized in 2 days using the standard 12-step protocol and started on cefazolin for her long-term treatment of the infection. Patient was admitted for 6 weeks due to her anticipated severe anaphylactic condition and given cefazolin for her bacteremia for the entire duration until she was discharged. Patient tolerated the treatment well with no complications. No acute episodes of drug hypersensitivity were reported. During the course of her hospital admission, she improved significantly with no complications. None of her autoimmune diseases seemed to interfere with the desensitization protocol and it is safe to say that the 'Mariana Castells' protocol can be used in patients with multiple autoimmune diseases.

3. Discussion

Previous attempts in linking allergies with autoimmune diseases has remained a mystery [6]. It is believed that patients with allergies are characterized by a lower predisposition to systemic diseases [2]. However, this view is rather poorly documented. There are few papers reporting the induction of autoimmune diseases in individual patients [6].

Hypersensitivity to drug therapy has remained a significant control factor in therapeutic approaches towards controlling various infectious diseases. Numerous papers have shown the effect of hypersensitivity on the quality of life for these patients [7]. However, despite the success of rapid desensitization, the cellular and molecular inhibitory mechanisms are incompletely understood [1]. Studies have shown basophil and mast cell models to implicate molecular signaling molecules STAT6 and syk. By treating type I mast cell/IgE dependent reactions in these critical situations, desensitization protocols act as a lifesaver [1]. Furthermore, anaphylactoid reactions with similar clinical presentation can also be treated with rapid desensitization [1].

Our patient having a history of both multiple autoimmune diseases and mast-cell activation syndrome tolerated the protocol well with no complications. Appropriate treatment of the reactions including epinephrine use and management with personalized desensitization protocols can enhance the quality of life, life expectancy, and safety of an increasing at risk population of patients with infectious diseases allergic to their best medications. Most patients with reactions with phenotypes consistent with type I and type IV reactions are candidates for desensitization, which can provide advancement of personalized treatments.

Drug desensitization protects against anaphylaxis and activates inhibitory mechanisms. Further research is needed to uncover cellular and molecular players amendable to pharmacological applications. This will make desensitization protocols safer and effective. Successful rapid desensitization protocols for treating adverse reactions to antibiotics allow for treatment of critically infected patients. Standardized protocols with high success rates should be implemented as the standard of care. Protocols, such as mariana castells, are completely safe in autoimmune disorders and should be utilized as the standard of care in appropriate patient population.

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None Declared.

Disclosure statement

No potential conflict of interest was reported by the author.

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