Open Access Original Research Article

MedPeer Publisher
Abbreviated Key Title: MedPeer
ISSN : 3066-2737
homepage: https://www.medpeerpublishers.com

Cardiac involvement, a rare and serious complication of DRESS syndrome.

DOI: 10.70780/medpeer.000QGQT

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ABSTRACT

Anticonvulsants and antibiotics frequently cause the severe drug reaction known as drug rash with eosinophilia and systemic symptoms (DRESS syndrome). Although it is uncommon, myocarditis linked to DRESS syndrome can happen in as many as 21% of cases, with a reported 50% death rate. This case highlights how crucial prompt diagnosis and aggressive treatment are to bettering patient outcomes. There is more information available on this subject.

KEYWORDS

DRESS syndrome, Myocarditis , Lamotrigine

MAIN ARTICLE

INTRODUCTION

The DRESS syndrome is a rare and severe drug reaction, often associated with potentially fatal systemic manifestations. While cardiac involvement is rare, it can be particularly severe, with high mortality in severe cases. We report the case of a 14-year-old girl who developed cardiac involvement following DRESS syndrome, highlighting the seriousness of this complication.

CASE REPORT:

A 15-year-old female patient, with a recently diagnosed history of epilepsy, was initially treated with valproic acid. However, due to poor tolerance, the treatment was switched to lamotrigine. One week after the initiation of lamotrigine, the patient developed erythema starting on the face and neck, which later spread to the chest, back, and lower limbs, accompanied by desquamation. She also developed an inflammatory syndrome, with an elevated CRP of 40, as well as a febrile syndrome with a temperature reaching 40°C.

The biological results showed a mild eosinophilia at 2%, hepatic cytolysis with ASAT at 65, ALAT at 81, PAL at 211, GGT at 158, and a decreased prothrombin time (PT) at 35%, along with thrombocytopenia at 65,000. An infectious workup was performed and returned negative.

Given this clinical picture, a diagnosis of DRESS syndrome was suspected with a REGISCAR score of 5, and lamotrigine was discontinued and replaced with levetiracetam. Treatment with methylprednisolone (1 mg/kg IV daily) was initiated, along with gastric protection, physical cooling measures, and management of skin lesions using petroleum jelly and saline solution. However, due to the persistence and worsening of hepatic cytolysis (with ALAT and ASAT levels 80 and 75 times above normal, respectively), levetiracetam was also discontinued.

The initial evolution showed regression of the skin lesions, normalization of renal function after 10 days, and progressive improvement of the hepatic function, with ALAT and ASAT levels returning to values 2 and 6 times above normal, respectively. The prothrombin time and platelet count also normalized.

Three weeks after admission, the patient developed acute respiratory distress, accompanied by chest pain and bilateral crackles. Her oxygen saturation dropped to 72%, requiring management with non-invasive ventilation and intravenous furosemide. Due to worsening respiratory status and deteriorating level of consciousness, invasive ventilation was initiated. A transthoracic echocardiogram revealed septal dyskinesia, a thin pericardial effusion, and a reduced left ventricular ejection fraction of 41% (Figure 1).

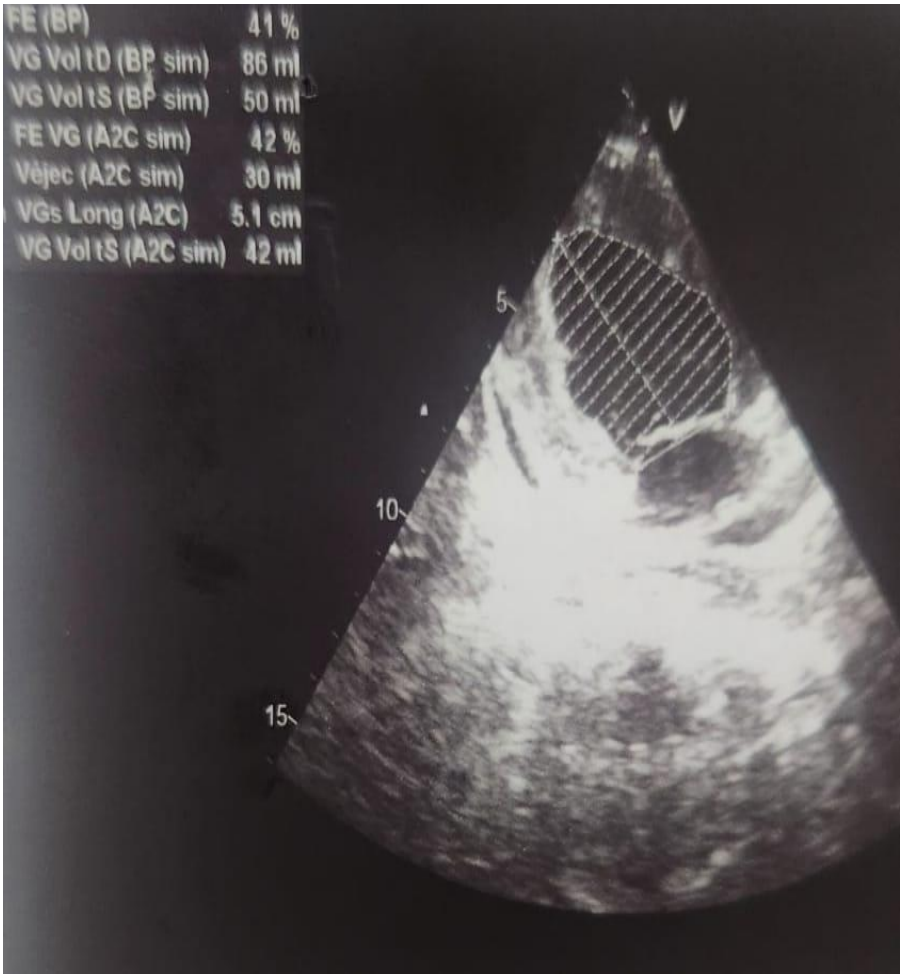

Figure 1 : Echocardiographic image showing a reduced left ventricular ejection fraction

Furthermore, cardiac enzyme levels, particularly troponin, were significantly elevated, reaching 30 times the normal level. The patient remained hemodynamically stable, not requiring vasoactive support. Her condition improved after one week, with extubation and transfer from the intensive care unit to the dermatology department. She was discharged home five weeks after the onset of her illness, while being treated with oral corticosteroids, which were tapered and discontinued three months later.

DISCUSSION

Drug rash with eosinophilia and systemic symptoms (DRESS) syndrome, also called drug-induced hypersensitivity syndrome, seem to be p-i reactions and are frequently linked to certain HLA-alleles e.g. abacavir, carbamazepine or allopurinol bind to certain HLA-alleles directly and thus elicit allo-like immune reactions [1] . DRESS syndrome is most commonly triggered by anticonvulsants and antibiotics [2]. The reported incidence of this syndrome in the general population ranges from 0.9/100,000 to 10/1,000,000 [3]. In our case, DRESS syndrome was caused by the use of lamotrigine. The incidence of lamotrigine-associated DRESS syndrome varies from 1 in 1,000 to 1 in 10,000 drug exposures [4]. DRESS is characterized by fever, morbilliform eruption, and systemic involvements after exposure to an offending drug. Liver is the most common organ involvement [5]. The most commonly used diagnostic criteria for DRESS syndrome, ranging from the simplest to the most complex, include Bocquet's criteria, the Japanese Consensus Group criteria, and the RegiSCAR scoring system [6]. In our case, the diagnosis was made based on the RegiSCAR score, which was 6. Myocarditis associated with DRESS syndrome remains rare, occurring in up to 21% of cases [7]. In 2012, Bourgeois et al. compiled the 22 reported cases of DRESS syndrome accompanied by myocarditis in the literature. [8]. Symptomatic heart conditions in affected patients typically present with chest pain, tachycardia, shortness of breath, and low blood pressure. Diagnostic tests usually show changes in the ECG and elevated cardiac enzymes. However, in some cases, non-specific gastrointestinal symptoms like nausea and vomiting may be the only signs present [9]. Mortality associated with myocarditis can reach 50%, with the majority of patients succumbing within 60 days of symptom onset. This mortality is often attributed to cardiac arrhythmias, cardiogenic shock, and refractory heart failure [10].

Due to the rarity of cardiac involvement in DRESS syndrome, no standardized treatment guidelines are available. Management generally involves discontinuation of the offending medication, corticosteroid therapy, mechanical circulatory support, and heart failure medications, all administered in an intensive care setting and tailored to the specific needs of each patient [10, 11]. Immunosuppressive treatment often includes high-dose steroids, while other immunosuppressive agents, such as cyclosporine, mycophenolate, intravenous immunoglobulins, and rituximab, have also been used [4, 12, 13].

The literature review assessed the efficacy of corticosteroid treatment for DRESS-associated myocarditis, which was administered in 36 cases (84%) . Among the corticosteroid-treated patients, 31% (11 patients) also received additional immunosuppressive therapies, such as

intravenous immunoglobulin (IVIG), which may have contributed to the improvement in their clinical outcomes. Mortality was 36% in the corticosteroid-treated group compared to 86% in the non-corticosteroid-treated group (p=0.03). Multivariate logistic regression analysis indicated that corticosteroid treatment was associated with a significant reduction in mortality. [9, 14].

CONCLUSION

Due to its high mortality rates, cardiac involvement is one of the most serious complications of DRESS syndrome, a rare but potentially fatal drug reaction. This case emphasizes the need for thorough, interdisciplinary monitoring even following early clinical improvement. In order to manage systemic failure and increase patient survival, early detection, prompt initiation of corticosteroid therapy, and immediate withdrawal of the offending agent in this case, lamotrigine remain critical.

ACKNOWLEDGEMENTS

The authors have no acknowledgements to declare and report no conflicts of interest.

REFERENCES

1. Ichler W, Adam J, Watkins S, Wuillemin N, Yun J, Yerly D. Drug Hypersensitivity: How Drugs Stimulate T Cells via Pharmacological Interaction with Immune Receptors. Int Arch Allergy Immunol 2015;168:13-24 https://doi.org/10.1159/000441230.
https://doi.org/10.1159/000441230

2. Cacoub P, Musette P, Descamps V, Meyer O, Speirs C, Finzi L, Roujeau JC. The DRESS syndrome: a literature review. Am J Med. 2011;124(7):588-97
https://doi.org/10.1016/j.amjmed.2011.01.017

3. Shiohara T, Kano Y, Takahashi R, Ishida T, Mizukawa Y. Drug induced hypersensitivity syndrome: recent advances in the diagnosis, pathogenesis and management. Chem Immunol Allergy. 2012;97:122-38.
https://doi.org/10.1159/000335624

4. Wang XQ, Lv B, Wang HF, et al. Lamotrigine induced DIHS/DRESS: manifestations, treatment, and outcome in 57 patients. Clin Neurol Neurosurg. 2015;138:1-7.
https://doi.org/10.1016/j.clineuro.2015.07.008
https://doi.org/10.1016/j.clineuro.2015.07.008

5. Ang CC, Wang YS, Yoosuff EL, Tay YK. Retrospective analysis of drug-induced hypersensitivity syndrome: a study of 27 patients. J Am Acad Dermatol. 2010;63(2):219-27. https://doi.org/10.1016/j.jaad.2009.08.050

6. Kim DH, Koh YI. Comparison of diagnostic criteria and determination of prognostic factors for drug reaction with eosinophilia and systemic symptoms syndrome. Allergy Asthma Immunol Res. 2014;6(3):216-21. https://doi.org/10.4168/aair.2014.6.3.216

7. Thongsri T, Chularojanamontri L, Pichler WJ. Cardiac involvement in DRESS syndrome. Asian Pac J Allergy Immunol. 2017;35(1):3-10. https://doi.org/10.12932/ap0847 https://doi.org/10.12932/AP0847

8. Bourgeois GP, Cafardi JA, Groysman V, et al. Fulminant myocarditis as a late sequela of DRESS: two cases. J Am Acad Dermatol. 2011;65(4):889-90. https://doi.org/10.1016/j.jaad.2010.12.013

9. Brambatti M, Matassini MV, Adler ED, Klingel K, Camici PG, Ammirati E. Eosinophilic Myocarditis: characteristics, treatment, and outcomes. J Am Coll Cardiol. 2017;70(19):2363-75. https://doi.org/10.1016/j.jacc.2017.09.023

10. Intarasupht J, Kanchanomai A, Leelasattakul W, Chantrarat T, Nakakes A, Tiyanon W. Prevalence, risk factors, and mortality outcome in the drug reaction with eosinophilia and systemic symptoms patients with cardiac involvement. Int J Dermatol. 2018;57(10):1187-91. https://doi.org/10.1111/ijd.14174

11. Husain Z, Reddy BY, Schwartz RA. DRESS syndrome: part I. Clinical perspectives. J Am Acad Dermatol. 2013;68(5):693.e1-14. https://doi.org/10.1016/j.jaad.2013.01.033

12. Hagiwara H, Fukushima A, Iwano H, Anzai T. Refractory cardiac myocarditis associated with drug rash with eosinophilia and systemic symptoms syndrome due to anti-bipolar disorder drugs: a case report. Eur Heart J Case Rep. 2018;2(4):yty100. https://doi.org/10.1093/ehjcr/yty100

13. Fozing T, Zouri N, Tost A, Breit R, Seeck G, Koch C, Oezbek C. Management of a patient with eosinophilic myocarditis and normal peripheral eosinophil count: case report and literature review. Circ Heart Fail. 2014;7(4):692-4. https://doi.org/10.1161/CIRCHEARTFAILURE.114.001130

14. Pursnani A, Yee H, Slater W, Sarswat N. Hypersensitivity myocarditis associated with azithromycin exposure. Ann Intern Med. 2009;150(3):225-26. https://doi.org/10.7326/0003-4819-150-3-200902030-00027