Case Report

Drug reaction with eosinophilia and systemic symptoms (DRESS) with severe and atypical lung involvement✩,✩✩

Diego Armando Guerrero Gómez, MD✩, Sara París Zorro, MD, Wilmer Aponte Barrios, MD, Jorge Alberto Carrillo Bayona, MD

Department of Diagnostic Imaging, School of Medicine, Universidad Nacional de Colombia, Hospital Universitario Nacional de Colombia, Colombia

A R T I C L E   I N F O

Article history:
Received 27 July 2020
Revised 17 August 2020
Accepted 19 August 2020

Keywords:
MeSH
Pulmonary eosinophilia
Anti-inflammatory agents
Non-steroidal
Drug-related side effects and adverse reactions
Radiology
Tomography

A B S T R A C T

Drug reaction with eosinophilia and systemic symptoms is a rare and potentially fatal drug hypersensitivity reaction. Reactions include skin eruption, fever, hematologic abnormalities (eosinophilia or atypical lymphocytosis), enlarged lymph nodes, and/or organic involvement. The liver is the most commonly compromised organ.

We present a case of drug reaction with eosinophilia and systemic symptoms associated with Naproxen intake in a young female patient with severe lung involvement. The patient’s chest tomography highlights the presence of adenomegalies, pericardial and pleural effusion, peribroncovascular consolidations, and centrilobular nodules.

After reviewing the literature few similar cases were found. The main radiological alterations in those cases included interstitial opacities attributed to pneumonitis. Therefore, this case study is considered an unusual case with atypical presentation of drug-induced eosinophilic lung disease.

© 2020 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license.

https://doi.org/10.1016/j.radcr.2020.08.037

A R T I C L E   I N F O

Introduction

Drug reaction with eosinophilia and systemic symptoms (DRESS) is a condition, that requires the presence of the following symptoms for its diagnosis: skin eruption, fever, hematologic abnormalities (eosinophilia or atypical lymphocytosis), enlarged lymph nodes and/or organic involvement, with the liver being the most commonly compromised organ. It is considered an infrequent and severe reaction that is related to hypersensitivity disorders with eosinophilia [1–3].

DRESS has been associated with anticonvulsants, antibiotics, and non-steroidal anti-inflammatory agents (Table 1),

✩✩ Acknowledgment: Hospital Universitario Nacional de Colombia and Universidad Nacional de Colombia.

✩✩ Competing interests: The authors declare that there is no conflict of interest in the present case report.

✩ Corresponding author.

E-mail addresses: daguerrerog@unal.edu.co (D.A. Guerrero Gómez), sparisz@unal.edu.co (S. París Zorro), woaponteb@unal.edu.co (W. Aponte Barrios), jacarrillo@unal.edu.co (J.A. Carrillo Bayona).

https://doi.org/10.1016/j.radcr.2020.08.037

1930-0433/© 2020 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license. (http://creativecommons.org/licenses/by-nc-nd/4.0/)
Table 1 - Drugs most commonly associated with DRESS syndrome.

| Drugs most commonly associated with DRESS syndrome |
|---------------------------------------------------|
| Non-steroidal anti-inflammatory drugs (NSAIDs). |
| Antibiotics (Nitrofurantoin, Minocycline, Sulfonamides, Ampicillin, Daptomycin). |
| Fenitoin. |
| L-tryptophan. |

with a variable latency time between drug intake and clinical manifestations [3,4].

Currently, the scoring system proposed by the Registry of Severe Cutaneous Adverse Reactions offers diagnostic criteria for hospitalized patients with a drug associated rash. The system allows classification for suspected clinical cases as excluded, possible, probable or definite for DRESS (Table 2) [2,4–6].

The first step in DRESS management is to stop medication involved in the reaction, further interventions follow according the severity of organ involvement. Symptomatic treatment is acceptable in mild cases, while patients with interstitial pneumonitis or nephritis require systemic steroids, and those with acute liver failure require transplants [2,3,7].

Case report

A previously healthy 22-year-old female patient received Naproxen for mechanical dorsal pain, 5 days later she developed skin eruption and dyspnea.

An initial chest radiograph was performed showing multilobar consolidations and bilateral pleural effusion (Fig. 1). The main laboratory alterations included eosinophilia (1780 absolute count) and hypertransaminasemia, suggestive of acute liver failure.

Fig. 1 – Portable Chest X-Ray, unique AP projection: Normal heart size. Multilobar and bilateral consolidations. Bilateral pleural effusion, most marked in the right side. Also note the presence of a central venous catheter (right subclavian) with the tip located in the right auricle.
Fig. 2 – Computed Tomography (CT) of chest: Mediastinal and lung windows: (A–C). Axial mediastinal window (A) with axilar adenomegalies, prominent mediastinal lymph nodes, mild pericardial effusion (not showed), and bilateral pleural effusion most marked in the right side. Axial lung window (B) and Coronal maximum intensity projection -MIP- (C) in lung window with peribroncovascular consolidations in both lungs, diffuse centrilobular nodules and atelectasis in both inferior lobes.
A high-resolution chest computed tomography was performed due to progressive dyspnea (Fig. 2). Axillary and mediastinal adenomegalies, pericardial and pleural effusion, peribroncovascular consolidations, and diffuse centrilobular nodules were visible.

Given the described tomographic findings, peripheral eosinophilia, and the clinical context, a diagnosis of eosinophilic pneumonia was performed. Other etiologies such as bacterial or viral infection were excluded and the Registry of Severe Cutaneous Adverse Reactions score reached 7 points, confirming a definitive diagnosis of DRESS. The patient showed an optimal response to systemic steroids, resolving the lung and liver alterations, with no requirement of liver transplant.
Table 3 – Respiratory symptoms and tomographic findings associated to DRESS syndrome with lung involvement.

| Symptoms                        |
|---------------------------------|
| Dyspnea.                        |
| Cough.                          |
| Pleuritic chest pain.           |

| Chest tomographic findings      |
|---------------------------------|
| Interstitial opacities.         |
| ARDS pattern.                   |
| Lobar consolidation.            |
| Centrilobular nodules.          |
| Adenomegalies.                  |

Discussion

DRESS is a rare and potentially fatal drug hypersensitivity reaction with organ involvement in up to 90 percent of patients. The most affected organs are the liver, kidneys, and lungs. Severe lung involvement in DRESS is considered infrequent, as it is present in about 5%-25% of cases and is associated with worst prognosis [8–11].

A systematic review published in 2019 by Taweesedt et al., included 22 patients with lung involvement due to DRESS syndrome finding dyspnea, cough, and pleuritic chest pain as predominant clinical manifestations. The main imaging findings included the presence of interstitial opacities related to pneumonia in 50% of patients, compatible findings characteristic of acute respiratory distress syndrome in 31% of cases, and less frequently pleural effusion (22.7%), lobar consolidations (14%), and centrilobular nodules (14%), (Table 3) [11].

Enlarged lymph nodes are a common finding in DRESS syndrome; therefore, adenomegalies are part of the possible chest tomographic alterations.

On the other hand, a case series study published by Lee et al. [12] included 5 patients with DRESS and lung involvement finding consolidations in 60%, and pleural effusion in 40% of the cases.

There are few case reports in the literature of lung involvement in DRESS syndrome however, it is recognized as an unusual finding the small airway’s compromise exhibited as centrilobular nodules and there is no report, to our knowledge, of pericardial effusion, as it is described in the present case report.

It is manifested with a broad spectrum of imaging findings such as multilobar consolidations, pleural effusion, and adenomegalies.

Diagnosis of DRESS syndrome should be considered in patients with compatible clinical history, previous related drug exposition, and eosinophilia.

Our case represents an unusual manifestation of DRESS syndrome as it showed centrilobular nodules and pericardial effusion associated to the classic findings previously described.

References

- [1] Hussain Z, Reddy B, Schwartz R. DRESS syndrome Part I. J Am Acad Dermatol. 2013;68(5):693.
- [2] Hussain Z, Reddy B, Schwartz R. DRESS syndrome Part II. J Am Acad Dermatol. 2013;68(5):709.
- [3] Um S, Lee S. Clinical features of drug-induced hypersensitivity syndrome in 38 patients. J Investig Allergol Clin Immunol. 2010;20(7). Jiacl.org. 2010 [cited 20 May 2020]. Available from: http://www.jiacl.org/issues/vol20issue7/vol20issue07-3.htm.
- [4] Kardaun S, Sekula P, Valeyrige-Allanore I, Liss Y, Chu C, Creamer D, et al. Drug reaction with eosinophilia and systemic symptoms (DRESS): an original multisystem adverse drug reaction. Br J Dermatol. 2013;169(5):1071–80.
- [5] Kardaun S, Sidoroff A, Valeyrige-Allanore L, Halevy S, Davidovici B, Mockenhaupt M, et al. Variability in the clinical pattern of cutaneous side-effects of drugs with systemic symptoms: does a DRESS syndrome really exist? Br J Dermatol. 2007;156(3):609–11.
- [6] Behera S, Das S, Xavier A, Selvarajan S. DRESS syndrome: a detailed insight. Hosp Prac (1995) 2018;46(3):152–62.
- [7] De A, Rajagopalan M, Sarda A, Das S, Biswas P. Drug reaction with eosinophilia and systemic symptoms: An update and review of recent literature. Indian J Dermatol 2018;63(1):30.
- [8] Cacoub P, Musette P, Descamps V, Meyer O, Speirs C, Finzi I, et al. The DRESS syndrome: a literature review. Am J Med 2011;124(7):588–97.
- [9] Chen Y, Chiu H, Chu C. Drug reaction with eosinophilia and systemic symptoms. Arch Dermatol 2010;146(12):1373.
- [10] Matsuno O. Drug-induced interstitial lung disease: mechanisms and best diagnostic approaches. Respir Res 2012;13(1):39.
- [11] Taweesedt P, Nordstrom C, Stoeckel J, Dunic I. Pulmonary manifestations of Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome: a systemic review. BioMed Res Int 2019;2019:1–10.
- [12] Lee J, Lee S, Hahm J, Ha J, Kim C, Kim S. Clinical features of drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome: a study of 25 patients in Korea. Int J Dermatol 2017;56(9):944–51.

Conclusion

DRESS syndrome is an infrequent but severe entity, with the worst prognosis occurring when lung involvement is present.