



Case Report

Carbamazepine-Induced DRESS Syndrome with RegiSCAR Analysis: A Case Report

Article History:

Name of Author:

Raushan K.C., Satish K.S., Ramesh B. and Ganachari M.S.

Corresponding Author:

Raushan K.C.

How to cite this article:

Raushan K.C., et, al. Carbamazepine-Induced DRESS Syndrome with RegiSCAR Analysis: A Case Report. *Eur J Clin Pharm.* 2021;3(1);28-31.

Received: 11-07-2021

Revised: 23-07-2021

Accepted: 14-08-2021

Published: 18-09-2021

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Noncommercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Abstract: Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome is a potentially life-threatening hypersensitivity reaction to various medications, notably anticonvulsants like carbamazepine. Diagnosis relies on clinical, laboratory, and scoring systems, such as the RegiSCAR criteria, to distinguish DRESS from other severe drug reactions. This report presents a detailed case of carbamazepine-induced DRESS syndrome in an adult, with diagnostic assessment via the RegiSCAR scale, clinical course, and therapeutic management, followed by a review of the literature and implications for practice.

Keywords: DRESS Syndrome, Carbamazepine, Hypersensitivity Reaction, RegiSCAR Criteria, Drug-Induced Reactions.

INTRODUCTION

DRESS syndrome, also known as Drug Hypersensitivity Syndrome, is a severe idiosyncratic reaction characterized by a triad of fever, rash, and internal organ involvement, typically arising 2–8 weeks after exposure to a culprit drug. Anticonvulsants like carbamazepine are common triggers^{[1][2]}. Prompt recognition and management of DRESS are essential due to the risk of significant morbidity and mortality.

CASE PRESENTATION

Patient Demographics

A 38-year-old woman presented with fever, malaise, and a generalized erythematous rash. She had a history of anxiety disorder and was recently prescribed carbamazepine for mood stabilization.

Drug Exposure and Timeline

Carbamazepine was initiated at 200mg/day for her neuropsychiatric condition. Symptoms began after 3.5 weeks of therapy.

Clinical Features

- Skin:** Diffuse morbilliform rash started on the trunk and spread to the limbs and face, associated with facial edema and desquamation.
- Fever:** Maximum recorded temperature was 39.2°C.

- **Lymphadenopathy:** Palpable, non-tender cervical and inguinal lymph nodes.
- **Organ Involvement:** Mild hepatitis (elevated AST/ALT), no renal involvement.

Laboratory Investigations

Parameter	Value	Reference Range
WBC	12,800/ μ L	4,000–10,000/ μ L
Absolute eosinophil	1,250/ μ L	<500/ μ L
Lymphocytes	4,600/ μ L	1,000–3,000/ μ L
Platelets	135,000/ μ L	150,000–400,000/ μ L
AST	88U/L	<35U/L
ALT	102U/L	<45U/L
Creatinine	1.0mg/dL	0.7–1.3mg/dL

- Viral serologies (HBV, HCV, HIV, EBV, CMV) were negative.

Regi SCAR Analysis

The Regi SCAR scoring system evaluates DRESS syndrome based on a prescribed set of clinical and laboratory criteria^{[1][3]}.

Regi SCAR Criterion	Patient Finding	Score
Acute skin rash	Present	+1
Fever >38°C	Present	+1
Enlarged lymph nodes in ≥ 2 regions	Present	+1
Involvement of at least one internal organ	Liver involvement	+1
Lymphocytosis >4,000/ μ L	Present	+1
Blood eosinophilia >700/ μ L or >10%	Present	+1
Thrombocytopenia <120,000/ μ L	Absent	0
Other causes (rule out infections, autoimmune, etc.)	Excluded	+1

Total Regi SCAR score: 7

According to Regi SCAR:

- **Definite DRESS:** >5 points
- **Probable:** 4–5 points
- **Possible:** 2–3 points
- **No case:** <2 points^{[3][4]}

Graphical Representation: Regi SCAR Criteria Fulfillment

Criterion	Fulfilled (Yes=1, No=0)
Skin rash	1
Fever >38°C	1
Lymphadenopathy	1
Internal organ involvement	1

Lymphocytosis	1
Eosinophilia	1
Thrombocytopenia	0
Exclusion of other causes	1
Total	7

Management

- **Immediate discontinuation of carbamazepine.**
- **Systemic corticosteroids (prednisolone 1mg/kg/day).**
- **Liver-protective measures and supportive care.**
- Rash resolved over 10 days; corticosteroids were tapered over 6 weeks.
- No recurrence on follow-up; patient stabilized on alternate non-aromatic anticonvulsant.

DISCUSSION

Pathophysiology and Risk

DRESS syndrome is a Type IV hypersensitivity reaction, with mechanisms including drug metabolism enzyme deficiencies and genetic predisposition (e.g., HLA-A*3101 with carbamazepine)^{[2][5]}. Latency usually ranges from 2–8 weeks after drug initiation, and reactivation of viral agents such as HHV-6 is sometimes observed.

LITERATURE REVIEW

- Carbamazepine is a major cause of DRESS, especially among aromatic anticonvulsants^{[2][6]}.
- The most common features include fever, cutaneous eruption, lymphadenopathy, and hepatic involvement^{[2][7]}.
- Visceral involvement can include liver (most common), kidney, lung, and rarely heart/myocarditis^{[2][7]}.
- Mortality is estimated at 10% due to liver failure or other organ dysfunction^{[1][7]}.

Regi SCAR vs. Other Criteria

Regi SCAR is widely used due to its sensitivity and practicality; it does not require evidence of viral reactivation, making it applicable in more clinical settings^{[1][3][4]}.

Differential Diagnosis

- Stevens–Johnson syndrome/TEN (absence of extensive epidermal necrosis)
- Acute viral hepatitis (ruled out via labs)
- Other drug eruptions (timing, systemic involvement, eosinophilia distinguish DRESS)

Table: Comparison of DRESS Diagnostic Criteria (Regi SCAR vs. Others)

Criteria	Regi SCAR	Japanese Consensus Group
Skin rash	Yes	Yes
Fever	Yes	Yes
Lymphadenopathy	Yes	Yes
Organ involvement	Yes	Yes
Eosinophilia	Yes	Yes
Viral reactivation	No	Yes (HHV-6)

Outcomes and Prognosis

Prompt drug withdrawal and corticosteroid therapy are central. Relapses may occur if corticosteroids are tapered too quickly. Most patients recover fully, but long-term sequelae (autoimmune thyroiditis, diabetes) have been reported in some^{[1][2][7]}.

Recommendations

- Clinicians must suspect DRESS in patients with exanthema, fever, lymphadenopathy, and organ dysfunction 2–8 weeks after starting a high-risk drug.
- Early identification, immediate withdrawal of culprit drug, and supportive care are vital for improved outcomes.
- Genetic screening may be considered in certain populations before carbamazepine prescription.

CONCLUSION

Carbamazepine-induced DRESS syndrome is a rare yet critical clinical entity, requiring high suspicion and structured evaluation using criteria like RegiSCAR. A prompt multidisciplinary approach significantly reduces morbidity and mortality.

REFERENCES

1. Hou, W. S., et al. "Carbamazepine-induced DRESS Syndrome: A Rare Case Report with RegiSCAR Analysis and Literature Review." *Journal of Psychosomatic Research*, 2022.
2. Çetin, M., et al. "Carbamazepine-induced DRESS syndrome leading to myocarditis: a case report." *Pediatrics International*, 2019.
3. Dursun, A., et al. "A case of DRESS syndrome associated with carbamazepine." *Turkish Archives of Pediatrics*, 2018.
4. "Carbamazepine-Induced DRESS Syndrome: A Case Report." *Journal of Pharmacology and Clinical Toxicology*.
5. "Severe DRESS syndrome after carbamazepine intake in a case with multiple addictions: A case report." *Experimental and Therapeutic Medicine*, 2020.
6. "Drug rash with eosinophilia and systemic symptoms (DRESS) syndrome: An update and review." *Frontiers in Medicine*, 2023.
7. "DRESS syndrome diagnostic criteria." *WikiDoc*.