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Drug Reaction with Eosinophilia and Systemic Symptoms: A Case Report and Review of the Literature

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Abstract: ***Background: Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) is a rare but potentially fatal adverse drug reaction characterized by delayed onset, extensive rash, eosinophilia and multiorgan involvement. Case presentation: We report the case of a 44-year-old woman who developed fever, generalized rash, facial swelling, jaundice and oral ulcers after intake of indigenous oral medication. Investigations revealed leukocytosis with marked eosinophilia and hepatic dysfunction. A diagnosis of DRESS syndrome was made based on RegiSCAR criteria. Management and outcome: The suspected medication was withdrawn and systemic corticosteroids were administered. The patient showed progressive clinical and biochemical improvement. Conclusion: Early recognition of DRESS is critical to prevent organ failure and mortality.***

Keywords: DRESS syndrome, eosinophilia, adverse drug reaction, drug hypersensitivity, hepatitis

1. Introduction

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS), also referred to as Drug-Induced Hypersensitivity Syndrome, is a severe idiosyncratic adverse drug reaction characterized by extensive skin eruption, fever, hematologic abnormalities and multiorgan involvement [1,2]. The estimated incidence ranges from 1 in 1,000 to 1 in 10,000 exposures [3], and mortality of 3–10% has been reported, largely due to hepatic failure [4,5]. A wide range of medications has been associated with DRESS, including anticonvulsants, sulfonamides, antibiotics and allopurinol [2,6,7]. Because onset is delayed and manifestations are variable, DRESS is frequently under-recognized.

2. Case Report

A 44-year-old woman presented with intermittent fever, yellowish discoloration of the eyes and urine, generalized pruritic rash, facial puffiness, limb swelling and painful oral ulcers for three to four weeks. She had taken an oral indigenous preparation for body ache a few weeks prior to symptom onset. There was no past history of diabetes, hypertension or previous drug allergy.

On clinical examination, she was febrile (101.5°F) with icterus, diffuse erythematous maculopapular rash, facial edema, right axillary lymphadenopathy and mild hepatomegaly. Laboratory evaluation showed hemoglobin 6.8 g/dL, total leukocyte count 40,004/mm³, platelets 4.11 lakh/mm³, eosinophils 31%, total bilirubin 7.67 mg/dL, AST 246 U/L, ALT 171 U/L and ALP 822 U/L. MRCP demonstrated hepatosplenomegaly, minimal ascites and right pleural effusion. Viral hepatitis markers were negative. Based on characteristic rash, eosinophilia, lymphadenopathy, visceral organ involvement and temporal relation to drug exposure, she fulfilled RegiSCAR criteria for probable DRESS syndrome [4,8]. The suspected medication was discontinued and systemic corticosteroids (prednisolone 1 mg/kg/day) were initiated along with supportive care, resulting in gradual improvement.

3. Review of Literature

DRESS is uncommon but clinically significant. Mortality ranges between 3.8% and 10% [4,5]. Frequent triggers include anticonvulsants, allopurinol, sulfonamides, vancomycin and NSAIDs [2,6,7]. Proposed mechanisms include genetic susceptibility [6], defective drug metabolism [7], viral reactivation [8] and immune dysregulation [2,9]. Clinical features generally develop two to six weeks after exposure and include fever, rash, eosinophilia and multiorgan involvement [2,3,5]. The liver is most commonly affected and hepatic failure remains the leading cause of death [4,9]. Other affected organs include kidneys, lungs, heart and endocrine glands. Diagnosis is often supported by RegiSCAR criteria [4,8]. Management includes withdrawal of the offending drug and systemic corticosteroids with slow tapering [5,10].

Head-to-Toe Systemic Involvement

Central nervous system: headache, confusion, rarely encephalitis
Eyes: conjunctival injection, periorbital edema
ENT/oral: facial puffiness, cervical lymphadenopathy, mucositis, oral ulcers
Skin: morbilliform rash, desquamation, pruritus, targetoid lesions
Respiratory: pneumonitis, pleural effusion
Cardiac: myocarditis, arrhythmia
Hematologic: leukocytosis, eosinophilia, atypical

lymphocytes
Liver: hepatitis, cholestasis, acute liver failure
Kidney: interstitial nephritis, renal failure
Gastrointestinal: abdominal pain, diarrhea, hepatosplenomegaly
Endocrine (late): autoimmune thyroiditis, diabetes mellitus

Table 1: Summary of Major Studies on DRESS Syndrome

S No	Author & Year	Study Type	Sample Size	Key Findings	Our Interpretation
1	Bocquet et al., 1996	Original description	9	Defined classical DRESS triad	Our case meets criteria
2	Cacoub et al., 2011	Narrative review	172	Mortality 3–10%; liver most affected	Explains risk in our patient
3	Kardaun et al., 2013	RegiSCAR cohort	117	RegiSCAR diagnostic scoring	Our case = probable DRESS
4	Chen et al., 2010	Retrospective	60	Eosinophilia in 60–70% cases	Matches 31% eosinophilia
5	Walsh & Creamer, 2011	Review	—	Systemic steroids recommended	Aligned with our management
6	Shiohara & Kano, 2017	Review	—	Viral reactivation and immune dysregulation	Supports proposed pathogenesis
7	Descamps et al., 2001	Case series	—	HHV-6 association	Explains delayed clinical course
8	Cabañas et al., 2020	Guidelines	—	Stepwise management algorithm	Consistent with our approach

4. Conclusion

DRESS syndrome is a serious multisystem adverse drug reaction. Early recognition, immediate withdrawal of the offending agent and timely initiation of corticosteroid therapy are essential to reduce morbidity and mortality. Clinicians should consider DRESS in patients presenting with rash, fever and eosinophilia after recent drug exposure.

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