Case Study

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CASE STUDY ON SULPHASALAZINE INDUCED DRUG RASH OVER FACE AND BODY

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Abstract

A 36 year old female patient presented to dermatology department with complaints of redness all over the body and fever. Patient was apparently normal, when she developed a fever followed by redness starting initially over phase followed by abdomen, chest, back and upper limbs and lower limbs. Patient has the history of dry drug taken prior to onset of lesions and similar episodes in the past after taking sulfasalazine drug for rheumatoid arthritis. Patient has no history of fluid filled spaces burning maturation and general or local lesions. sulfasalazine was identified as the causative agent for this adverse drug reaction.

Keywords: Erythroderma, Drug reaction, Sulfasalazine, Rheumatoid arthritis, Fever,Cutaneous adverse drug reaction (CADR).

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Introduction to Sulphasalazine

Sulfasalazineis a widely used anti-inflammatory and immunomodulatory medication, composed of Sulfa pyridine and 5-amino salicylic acid, linked by an azo bond that imparts distinctive pharmacological properties [1]. In the Intestine, Sulfasalazine is poorly absorbed but undergoes enzymatic cleavage by azoreductases from intestinal bacteria, producing the active constituents sulfa pyridine and 5-ASA [2]. Sulfa pyridine primarily exerts systemic anti-inflammatory effects by suppressing the synthesis of inflammatory mediators, reducing leukocyte infiltration at inflammatory sites, and modulating cytokine secretion [3]. In contrast, 5-ASA offers localized protection to the intestinal mucosa, potentially through mechanisms such as scavenging oxidative free radicals, inhibiting neutrophil infiltration, and preserving mucosal barrier integrity. The combined action of these components endows sulfasalazine with dual systemic and localized therapeutic efficacy [4].

Pharmacokinetics

Absorption:Oral administration of 1g of Sulphasalazine, less than 15% of a dose of Sulphasalazine is absorbed as the parent drug. Maximum concentrations of Sulphasalazine occur between 3 and 12 hours post-ingestion, with the peak concentration (6 microgram/ ml) occurring at 6 hours [5].

Distribution: Intravenous injection, the volume of distribution for Sulphasalazine was 7.5. Sulphasalazine is highly bound to albumin while sulfa pyridine is only about 70% bound to albumin [5].

Metabolism: In the intestine, Sulfasalazine is metabolized by intestinal bacteria to sulfa pyridine and 5- amino salicylic acid. Of the two species, sulfa pyridine is relatively well absorbed from intestine and highly metabolized, while 5- amino salicylic acid is much less well absorbed [5].

Elimination: Absorbed sulfa pyridine and 5-amino salicylic acid and their metabolites are primarily eliminated in urine [5].

Pharmacodynamics

Mechanisms of action

Although the exact mechanism of action of Sulphasalazine is not fully understood, it is thought to be mediated through the inhibition of various inflammatory molecules. Research have found that Sulfasalazine and it's metabolites, mesalazine and sulfa pyridine, can inhibit leukotrienes and prostaglandins by blocking the cyclooxygenase and lipoxygenase pathway. Specific enzymes that were investigated include 5-lipooxygenase. Inhibitory activities on other non-arachidonic acid derivatives have also been observed, including PPAR gamma, NF-Kb, and IkappaB kinases alpha and beta [5].

Side effects

Nausea, vomiting, loss of appetite, Diarrhea, orange colored urine and tears, sulfa rash (Itchy skin rash), mouth ulcers, sore throat, sore gums, Disturbance in blood count and lower of sperm count, Headache [5].

Adverse effects

The most common adverse effects of Sulphasalazine are Dyspepsia, Anorexia, Abdominal pain, Diarrhea, Sulfa pyridine components of the drug is responsible for many hypersensitivity reactions, pulmonary toxicity, liver dysfunction , jaundice, and Drug reaction with eosinophilia and systemic symptoms[DRESS] is a serious adverse reaction that can occur with Sulfasalazine.

Drug interactions

Abacavir:Sulfasalazine may decrease the excretion rate of abacavirwhich could result in a higher serum levels.

Abciximab: The risk of severity of bleeding and hemorrhage can be increased when Sulfasalazine is combined with abciximab.

Acarbose: Sulfasalazine increases the hypoglycemic activities of acarbose.

Food interactions:

Drink plenty of fluids. Inadequate fluid intake is associated with crystalluria and stone formation.

Patient profile:

Age:36

Gender:Female

Presenting complaints:Redness all over the body and Fever since 1 day

Past medical history:Sulfasalazine 500mg

Present History

- The patient reports the rashes all over face since one day. Which started acutely and have progressively worsened.
- She also mentions intermittent fever during the same time frame
- The patient has the history of similar rash in the past.

Recent Medication History

- The patient was started on Sulphasalazine as part of her ongoing management of Rheumatoid arthritis.
- No changes in the dosage or medication regimen prior to the development of symptoms

Physical Examination

Vital signs: Temperature: 99°F
Blood pressure: 120/80 mmHg
Pulse: 82 beats / min
SpO2 (RA): 97%

Cutaneous examination: Multiple well defined Erythematous macules coalescing to form patches of varying sizes ranging from 0.5-3.3cm over face, chest, back, upper and lower limbs. Targetoid lesion present over abdomen.

Investigation

- CBP (complete blood picture): To check for signs of infection or systemic inflammation.
- LFT (liver function test): To assess for hepatic toxicity, which is a adverse effect of Sulphasalazine.
- Electrolytes: To monitor for any electrolyte imbalance.
- RBS (Random blood sugar): To monitor blood glucose levels.

Management Plan

1. Discontinuation of Sulphasalazine

Given the temporal relationship between the initiation of Sulphasalazine and onset of rash, it is important to discontinue the drug to prevent further hypersensitivity reactions. An alternative Anti-inflammatory medication may need to be considered.

2. Symptomatic treatment for rash

Anti-inflammatory and antibiotics are used to relieve Itching and infection.

3. Anti-pyritic-To relieve fever management (eh: Acetaminophen).

4. Monitoring – The patient should be closely monitored for signs of worsening systemic involvement, especially in case of severe drug reactions (eh: Drug Reaction with Eosinophilia and Systemic Symptoms – DRESS

5. Consider alternative Anti-inflammatory medication– If the Sulfasalazine rash is confirmed, a new Anti-inflammatory drug regimen may be initiated.

Conclusion

A 36 year old female patient presented with Rashes all over body and Fever in association with use of Sulphasalazine strongly suggests a drug induced hypersensitivity reaction. The management includes discontinuing Sulphasalazine and symptomatic treatment for rash and fever.

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Author Contribution

All authors are contributed equally.

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