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MULTIPLE DRUG INDUCED DAPSONE HYPERSENSITIVITY SYNDROME: A CASE REPORT

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ABSTRACT

Dapsone is an antibiotic and anti-inflammatory drug used to treat a variety of diseases, but it is most frequently prescribed to leprosy patients. The most frequent side effects of this medication are nausea, appetite loss, and dizziness, but in this case, dapsone hypersensitivity syndrome (DHS) also seems to be a side effect. It is a rare side effect of dapsone. A 38-year-old woman arrived with complaints of fever, skin lesions all over her body, and itching for seven days. She was also a known case of leprosy for 30 days prior, for which the (MDT) regimen - Rifampicin 600mg, dapsone 100mg - was being used. The patient recovered after stopping the dapsone, according to the case report.

KEYWORDS: Dapsone, Dapsone hypersensitivity syndrome, Leprosy.

INTRODUCTION

Dapsone (diamino-diphenyl sulfone) is an anti-inflammatory and antibiotic drug used to treat a variety of diseases such as leprosy, dermatitis herpetiformis, linear IgA bullous dermatosis and chronic bullous dermatosis in children, bullous eruption of systemic lupus erythematosus, erythemaelevatum diutinum, leukocytocla. The drug's side effects have drawn the attention of medical professionals in a variety of specialties due to its widespread use. Pharmacological side effects and idiosyncratic side effects are the two categories. Methemoglobinemia, hemolytic anaemia, and other side effects are part of the former, which is brought on by the drug's dosage. The latter is brought on by cell-mediated hypersensitivity (DHS), which can lead to severe, potentially fatal complications like exfoliated dermatitis, liver function failure,

agranulocytosis, toxic epidermal necrolysis, nephritis, renal failure, Stevens-Johnson syndrome. It is a type of drug-induced hypersensitivity syndrome (DIHS) with a rash, fever, and organ involvement (including liver, kidney, hematological system, etc.[1,10,11]

CASE DESCRIPTION

A 38-year-old female, housewife who had a two-day fever, swelling all over her body for two days, and a lesion on her skin that had been itchy for seven days arrived at the hospital. At the primary health centre, she was given a leprosy diagnosis thirty days prior, and a multidrug therapy (MDT) regimen containing rifampicin 600 mg and dapsone 100 mg for one month was started. She stopped the regimen five days ago. She admitted to a history of photosensitivity and white patches on her abdomen when questioned. She had hypertension, a history of tuberculosis (TB), a thyroid disorder in her mother, a family history of leprosy in her father, who underwent MDT, and a history of TB inher sister, who underwent six months of AKT treatment. No one in the family had a history of asthma or similar complaints. An extensive lymph node count, along with diffuse facial puffiness, periorbital nonpitting edema, anterior cervical, posterior cervical, axillary (anterior, lateral, and posterior), and inguinal lymph nodes, were found during a general examination. She had a broad, erythematous, maculopapular rash that covered her neck, shoulders, periorbital area, and forehead. The eyes, nails, genitalia, or mucous membranes were unaffected. There were no nodules, arthralgia,or tenderness. Seven years ago, she underwent an LSCS. The following paragraph (table -1) shows the lab test results. The liver function tests' (LFTs') results were abnormal. Urea levels were abnormal during the kidney function test, but creatinine levels were within normal ranges. Blood electrolytes were within normal limits. On both chest radiography and abdominal and pelvic ultrasonography, there were no notable findings.

Table 1: Lab Investigation.

Parameter	Day 1	Day 6
Hemoglobin	11.2gm%	11.0gm%
Total leucocytecount	21500/mm^3	32000/mm^3
Plateletcount	2.54/mm^3	-
Totalbilirubin	0.7mg/dL	-
Directbilirubin	0.2mg/dL	-
Indirectbilirubin	0.5mg/dL	-
SGOT	48U/L	34U/L
SGPT	155U/L	63U/L
Urea	30mg/dL	-
Creatinine	0.6mg/dL	-
HBsAg	Non-reactive	-

HIV	Non-reactive	-

Dapsone was therefore stopped, and she received treatment with intravenous (i.v.) dexamethasone and ceftriaxone (for one week), as well as intravenous fluids, oral vitamin (iron) supplements, oral antipyretics (Tab.PCM), oral antihistamines, and topical application (closys cream + richomistcream). The patient's clinical condition had improved after one week, and laboratory tests were also within normal ranges, as shown in table 1. She continued taking a tablet of rifampicin 600mg and clofazimine 50 mg as an alternative medication after stopping dapsone. She was switched totaking tablets of oral corticosteroids; Prednisolone was given at a dose of 50 mg for 4-0-0, then 50 mg for 3-0-0 when the patient was discharged. The removal of dapsone brought about a lot of relief.

DISCUSSION

A drug called dapsone, also known as 4,4'-diaminodiphenylsulfone, is primarily used as an antibacterial and anti-inflammatory agent to treat various skin conditions. Since the 1950s, dapsone has been favoured as the initial leprosy treatment.[7] The dapsone syndrome typically manifests five to six weeks after dapsone administration. Fever, skin rashes, and organ involvement set DHS apart.[5] Following the cessation of dapsone, Steven Johnson's Syndrome (SJS), Toxic Epidermal Necrolysis (TEN), erythematous papules, plaques, pustules, and eczematous lesions can develop and typically go away within two weeks.[9] A hypersensitivity reaction happens about six weeks after the start of the treatment.[3,4] Although the exact mechanism of DHS is unknown, a number of hypotheses have been put forth, including delayed hypersensitivity reaction, altered hepatic metabolism, including acetylation and hydroxylation with the formation of secondary toxic metabolites, as well as the production of toxic metabolites via the N-hydroxylation pathway.[6,8,12]

The RichardusJH and SmithTC criteria for diagnosing Dapsone Hypersensitivity Syndrome are asfollows.

1. The symptoms appear eight weeks after beginning dapsone and should subside if the medication is discontinued.
2. The effects should not be attributed to any other medication take in conjunction with dapsone.
3. Thesymptomsshouldnotbeassociatedwithleprosyoranyotherunderlyingcondition.
4. One or more of the following symptoms must be present: skin eruption, liver failure, fever, andlymphadenopathy.

Between the second and eighth weeks of treatment, the reaction was identified as dapsone syndrome because at least two of the symptoms—skin eruption, liver dysfunction, fever, lymphadenopathy, and liver function tests—were present. According to Richard and Smith, rifampicin combination therapy was also a significant factor in the development of hypersensitivereaction. Hypersensitivity reaction was seen in more cases of MDT with both multi and paucibacillary.[2]

CAUSALITYASSESSMENT

Scale's Name	Result
WHO Scale	Probable
Naranjo Scale	Probable

CONCLUSION

Dapsone has been used in a variety of medical specialties, including inflammatory, dermatologic, and insect bites, and its applications are expected to expand. Reports indicate a rising DHS prevalence. Therefore, it's imperative to remember this serious condition and distinguish it from other disorders with comparable available treatments. Awareness among medical professionals andpatients is crucial for the early detection and treatment of ADRs. Rapid intervention prompted by early coverage enables early recovery, reducing avoidable drug-induced morbidity.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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