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## DAPSONE INDUCED HYPERSENSITIVITY SYNDROME (DHS) IN CASE OF LEPROSY

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### ABSTRACT

Dapsone is used for treating wide range of disease condition like dermatitis, herpetiformis, Hansen's disease etc. Dapsone is fall under class of drug known as sulfones. It works by slowing down the inflammation and inhibits the growth of bacteria. Some patients who are taking dapsone may suffer hypersensitivity reactions. DHS is characterized by a combination of fever, skin eruption, and internal organ involvement. In general, these symptoms will develop over the first six weeks of therapy. In this case, a 38-year-old female patient came to multispecialty hospital with complains of fever on and off since 13 days, skin lesions all over the body associated with itching since 7 days, swelling over face since 2 days. Symptoms and laboratory examination were found to be similar with Dapsone Hypersensitivity Syndrome (DHS). This case report provides an understanding of DHS. Proper monitoring is necessary and timely laboratory findings should be obtained for less adverse events.

**Keyword: Dapsone, Dapsone Hypersensitivity Syndrome (DHS), Adverse Drug Reaction, Leprosy**

### INTRODUCTION:

#### Dapsone Hypersensitivity Syndrome

Dapsone hypersensitivity syndrome was earlier discovered in 1949 as an exfoliative

dermatitis, fever, and hepatitis syndrome, but it is now known as an idiosyncratic dose-independent hypersensitivity reaction [1].

Some patients who are taking dapsone may suffer hypersensitivity reactions. This reaction may be more prevalent in patients who are undergoing multiple drug therapy. DHS is characterized by a combination of fever, skin eruption, and internal organ involvement [2]. In general, these symptoms will develop over the first six weeks of therapy, and corticosteroid administration may help to reduce them. If DHS is not detected and appropriately managed, it can lead to lifelong organ damage and even death [2].

**Dapsone:**

Dapsone is used for treating wide range of disease condition like dermatitis, herpetiformis, Hansen's disease etc. It's a second-line treatment for the treatment and prevention of streptococcus pneumoniae and toxoplasmosis in immunocompromised individuals. Dapsone is fall under class of drug known as sulfones [3]. It works by slowing down the inflammation and inhibits the growth of bacteria. Dapsone works as an antibiotic by competing with para-aminobenzoate for the active site of dihydropteroate synthase, limiting bacterial dihydrofolic acid synthesis and hence nucleic acid synthesis [3]. Dapsone can be applied topically or administered orally. A drop in blood cells, red blood cell breakdown, notably

among those with glucose-6-phosphate dehydrogenase deficiency (G-6-PD), or hypersensitivity are all potentially serious adverse effects [4]. Nausea and loss of appetite are two common side effects. Inflammation of the liver and a diversity of skin rashes are among several side effects. Dapsone induces hypersensitivity reactions in 1.4 percent of patients [5].

**Case Report:**

A 38-year-old woman reported to a multispecialty hospital's dermatology unit with complaints of fever on and off for 13 days, skin lesions all over the body with itching for 7 days, and swelling all around the body in the previous two days. She was diagnosed with leprosy a month earlier and has been on Cap. Rifampicin (600 mg) and Tab. Dapsone (100 mg), for the past month. Patient was apparently alright 13 days back and then she feels fever every 2 to 3 days that was moderate, intermittent and not accompanied by chills or rigors and was treated with antipyretic medicine. Patient then developed skin lesions over both hands with itching one week earlier, which steadily progressed to involve both legs, trunk, and face, and patient happened to come to multispecialty hospital for the same 5 days ago, where oral medications were started and Cap. Rifampicin (600 mg) and Tab. Dapsone

(100 mg) was stopped, but mild relief was obtained. The skin lesions worsened two days ago, and the patient experienced swelling on both thighs, which extended to the legs, cheeks, and lips. Based on a history of dapson administration, Fever, maculopapular rashes with itching and blanchable erythema, generalized periorbital swelling and facial puffiness, and mild pitting angioedema, a diagnosis of dapson hypersensitivity syndrome was established. After that, the patient was admitted to a multispecialty hospital's dermatology ward. On laboratory examination Hemoglobin - 11.2 g/dl, WBC - 21,500 cells/mm<sup>3</sup>; liver function

tests such as AST-48 IU/L, ALT-155 IU/L, and blood test for glucose 6 phosphate dehydrogenase assay seemed to be normal and treatment started with Inj. Dexamethasone (2cc) IV once daily, Inj. Ceftriaxone (1g) IV twice daily, Topical clobetasol cream and liquid paraffin cream (mix & apply locally) twice daily, and other supportive care was given and topical beclomethasone dipropionate lotion was added for swelling over scalp. On the 5<sup>th</sup> day of admission, the patient was discharged, and all laboratory tests appeared to be normal. On discharge, the patient was given rifampicin, ofloxacin, minocycline, and clofazimine orally.



Figure 1

**Causality Assessment:**

WHO Scale: Possible

Naranjo's Scale: Probable

**DISCUSSION**

The obligatory intracellular acid-fast bacillus *Mycobacterium leprae* causes leprosy, a deadly illness with fatal consequences that often appears as numbing skin lesions and peripheral nerve expansion and/or dysfunction [6]. To eliminate medication resistance, multidrug treatment is used to treat multibacillary leprosy. The World Health Organization suggests a 12-month regimen with a mixture of dapsone, rifampin, and clofazimine, although clofazimine is not used in this case [7]. Combining dapsone with other anti-leprosy medications, especially rifampicin, might be one of the contributory factors [8]. It commonly appears 2–8 weeks after starting dapsone and is referred to as 'fifth-week dapsone dermatitis [9]. DHS is managed by dapsone withdrawal and corticosteroid commencement, usually at prednisone dosages of 30–60 mg per day, with a mild tapering after end organ involvement is resolved. Following the start of the taper, it's critical to keep a close eye on organ function [10]. Because of the potential formation of anti-dapsone antibodies, rechallenging with dapsone must be avoided. DHS can take up to

four weeks to heal, with the majority of rashes clearing up after two weeks [11].

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