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Isoniazid-Induced Systemic Lupus Erythematosus

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ABSTRACT:Systemic lupus erythematosus can be induced by various medications such as isoniazid, hydralazine, infliximab and quinidine. A patient was admitted with complains of fever and skin lesions on both limbs and head. Patient was a known case of tubercular meningitis and was taking category 2 regimen (Isoniazid, Rifampicin, Pyrazinamide, Ethambutol and streptomycin as per weight band) for past 2 months. As the patient condition did not improve, detailed investigations were conducted and elevated antinuclear antibody levels were found. The consulting physician diagnosed that the patient was suffering from SLE. As isoniazid has been reported with incidence of SLE the drug was withdrawn. The patient condition improved and got discharged.

KEY WORDS: systemic lupus erythematosus, isoniazid, tuberculosis, drug induced lupus erythematosus

I. INTRODUCTION:

Systemic lupus erythematosus (SLE) is an autoimmune disease in whichorgans and cells undergo damage initially mediated by tissue-bindingautoantibodies and immune complexes. In most patients, autoantibodies are present for a few years before the first clinical symptoms. It is characterized by autoantibody against self-antigen, resulting in inflammation mediated multiorgan damage. Infections, cardiovascular diseases and renal failure accounts for the majority of mortality in these patients [1].Drug induced lupus erythematosus is a rare adverse effect where the patient develops symptoms similar to systemic lupus erythematosus after exposure to certain medications [3]. Here we present a case of isoniazid induced systemic lupus erythematosus.

II. CASE REPORT

A 22-year-old female patient was admitted to female medical ward with complains of fever and skin lesions on both limbs and head in last 15 days. Patient was known case of tubercular meningitis and was taking category 2 regimen (Isoniazid, Rifampicin, Pyrazinamide, Ethambutol and streptomycin as per weight band) for past 2 months. On admission injections of ceftriaxone 1g IV, pantoprazole 40mg IV, mannitol 50ml IV, ondansetron 4mg IV and tablet prednisolone 30mgwere prescribed. Routine investigations were conducted, including a complete blood count, renal function test, widal test, sputum examination, blood and urine culture and sensitivity, ultrasonography, HIV test, MRI scan. Relevant results of investigations are listed in Table 01.

On day 2 the same treatment was continued along with addition of tablets of ferrous fumarate 150mg, vitamin D3 500mg, and b complex 5mg to address patient low hemoglobin level.

The patient was referred to the dermatology department to address their skin lesions after a positive antinuclear antibody (ANA) report was obtained (Table 02). They advised to stop isoniazid for 15 days and they prescribed fluconazole 150mg, clotrimazole mouth paint orally along with previous treatment including corticosteroids. After 15 days improvement was seen on patient and they were discharged by omitting isoniazid from their antituberculosis treatment.

Causality assessments were done using WHO-UMC causality assessment criteria, the association between the reaction and isoniazid was considered probable.

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Table 01: Relevant results from laboratory investigations along with reference values

Report	Result	Reference values
MRI Scan	Tuberculous meningitis with granuloma	
Hemoglobin	8g/dl	12-16g/dl
Total WBC	3500	4500-11000cells/cumm
RBC count	2.95	3.5-5.0 x106/mm3
Packed cell volume	27.7&	33-43%
CSF sugar	34mg/dl	50–75 mg/dl
Adenosine deaminase activity in CSF	22.4 µ/l/min	< 10 µ/l/min
C- reactive protein	Positive	Negative

Table 02: Antinuclear antibody profile report

	Result	Inference
Antinuclear antibody Profile	Positive	Associated with systemic lupus erythematosus, an autoimmune disease

III. DISCUSSION

Isoniazid is the first line treatment and the drug of choice for tuberculosis;however,the drug has been associated with a wide range of adverse reactions.The incidence and severity of adverse reactions to isoniazid are related to dosage and duration of therapy. The most common of these is hepatotoxicity, followed by neuropathy and also, a condition called systemic lupus erythematosus [4].Drug induced lupus erythematosus is a rare adverse effect where the patient develops symptoms similar to systemic lupus erythematosus after exposure to certain medications[3]. Isoniazid is metabolized by N-acetylation in humans, although no distinct NAT allele has been specifically identified. The disruption of immune regulation which leads to SLE can be associated with the ability of INH and the chemically similar anti-hypertensive agent hydralazine, to form a covalent inhibitory reaction with complement component C4, which is likely to result in an inability to clear immune complexes[4].

IV. CONCLUSION

Antituberculosis drugs are responsible for frequent side effects. Isoniazid is by far most frequently used drug for tuberculosis.It is very important to identify the adverse effect of each medication and to treat them correctly to maintain the patient compliance of treatment.

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