RIFAMPICIN-INDUCED ACUTE RENAL FAILURE AND HEPATITIS

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ABSTRACT

Rifampicin is a potent drug and is the main drug in the multidrugs therapy for lung tuberculosis. We know this drug can induce hepatitis and nephritis in hypersensitive patient. The diagnosis of drug induced hepatitis is based on the fact that the patient was not ill before using the drug and become ill after taking it. In most cases the patient will improve after its withdrawal. We report a patient suffered from hepatitis and acute renal failure after using rifampicin and whose symptoms disappeared after stopping this drug.

***Key words**: rifampicin, acute renal failure, hepatitis*

INTRODUCTION

Acute renal failure (ARF) is defined as a deterioration of renal function over a period of hours to days, and up to 20 per cent of cases can be directly attributed to drugs.[1,2]

ARF can be classified as prerenal, postrenal and renal. It is of critical importance to classify renal failure into one of these categories as promptly as possible, since diagnostic and therapeutic management designed to reserve its course depends upon recognition of etiologic and pathogenic mechanisms.

Toxic nephropathy refers to adverse effects upon kidneys by agents encountered in ordinary life or agents used for diagnostic or therapeutics purposes in the practise of medicine. Reasons for renal susceptibility to toxicity are its large surface area, high blood flow, and role in the detoxifications and excretion of most drugs. Chronic damage occurs insidiously and the role of drugs may to unrecognized [4,5]

Over 50 drugs have been reported as causes of acute interstitial nephritis (AIN), including penicilins, sulphonamides, NSAID. Other drugs that are well recognized as causes of this condition include ciprofloxacin, rifampicin, phenytoin and cephalosporins. The underlying immunological mechanism remains to be elucidated. The diagnostic, within 2-4 weeks after drugs exposure. Renal biopsy remains the most definitive test. The key to diagnosis and treatment of drug related renal syndrome is generally dependent on early recognition of and discontinuing the action of the offending agent.[6,7]

Rifampicin is rapidly eliminated in the bile,and enterohepatic circulation. The half-life of rifampicin is progressively shortened by about 40% during the first 14 days of treatment, owing to induction of hepatic microsomal enzymes with acceleration of deacetylation of the drugs. Up to 30% of a dose of the drugs is secreted in the urine.[8-10]

In general, rifampicin is a well-tolerated drug. Asymptomatic transaminase elevation may occur during the first few weeks of therapy. However the incidence of overt hepatitis is less than 1 percent.

Other adverse effects of rifampicin such as allergic reaction, drug fever, hemolytic anemia, renal insufficiency and acute renal failure have been observed rarely.

Acute Intertitial Nephritis (AIN) occurs as an immuno allergic or cell-mediated immune response to a variety of drugs, particularly penicilin, rifampicin, etc. Both humoral and cellural immunity are involved.[2,3]

Drug-related hepatotoxicity should always be considered in the differential diagnosis of dysfunction. The clinical picture may be that of hepatocellar (hepatitis like) injury, cholestasis, or both vascular lesions or tumor of the liver. All of these may be caused by drugs or toxins. Liver enzymes generally return to normal within a few weeks after withdrawal of the offending agent.

CASE REPORT

A thirty three-year-old man was admitted to Cipto Mangunkusumo Hospital because of fever and weakness. Ten days prior to admission, the patient suffered

from bloody cough of about one tea spoon, prolonged cough and night sweat. At that time, he came to a general practitioner and he had a chest X-ray performed. The doctor said that he had lung tuberculosis and he received two kinds of drugs: rifampicin (450 mg) and vitamin. The next day, the patient felt more weakness, and suffered from nausea and vomitting. The patient continued on these drugs for 5 days. Two days after that, he complained that his urine color was red and that his eyes were yellow. This condition brought him to come to the hospital.

In past history of illness, on 1984, he suferred Pulmonary TB and received streptomycin injections for three months and oral drugs for one year. After that, the doctor said that he was already well.

On initial examination, the patient was fully alert and moderately ill. His body weight was 60 kg, and his height was 165 cm. The blood pressure was 120/80 mmHg. The pulse was 90x/m, the respiratory rate was 22x/m. The conjunctivae was not pale, the sclera was icteric. The chest examination showed no abnormality. From the abdominal examination, we found liver enlargement without palpable pain. The spleen was not palpable and there was no ascites. No enlargement of lymph nodes.

Laboratoric studies were performed (tables 1). The chest X-rays revealed a specific active process with left pleural reaction.

Further laboratoric examination showed that rifampicin antibody was negative and all serological hepatitis was negative. The acid fast bacilli sputum was negative for three times.

On the follow up, rifampicin was discontinoued. Due to a lack of urine production, the patient was given furosemide injection for a few days. This injection improved urine production. Jaundice in this patient decreased and disappeared after 7 days. The evaluation of lung TB showed that patient had no active lung TB.

Table 1. Hematological and blood chemical values

VARIABLE	On admission
Hemoglobin (g%)	12.2
Hematocrit (%)	33
White-cell count (per mm^3)	17 400
Platelet count (per mm^3)	123 000
Blood sugar (mg/dl)	99
Bilirubin (mg/dl)Total	7.4
Conjugated	3.9
Protein	
Albumin	7.4
Globulin	5.5
Alkaline phosphatase (U/liter)	240
SGOT (U/l)	88
SGPT (U/l)	110
Ureum (mg/dl)	219
Creatinine (mg/dl)	12.8

DISCUSSION

Drug induced hepatitis is a potential complication, because the liver is central for metabolic disposition of all drug.[11] Injury to hepatocytes result in the disruption of intracelluler function or membrane integrity. Rifampicin is one of several drugs that can cause drug induced hepatitis. Rifampicin can impair bilirubin uptake, resulting in elevated bilirubin levels.

In this case, we can see rifampicin induced hepatitis and increased bilirubin level of patient up to 7,4 mg/dl. Actually hepatitis from rifampicin rarely occurs in patient with normal liver function. There was no data of the patient's liver function prior to drug administation.

Besides inducing hepatitis, rifampicin can induce acute renal failure as well. This drug can cause acute interstitial nephritis. But renal failure due to acute interstitial nephritis is often reversible after withdrawal of treatment. In this case, renal function went back to normal after withdrawal of rifampicin.[6] Actually, corticosteroids can be used to induce recovery of renal function, but its use is still controversial. In this case, we did not administer corticosteroids and the patient's renal function recovered just only by terminating drug administration.

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