INTRODUCTION

Hepatitis C virus (HCV) infection affects more than 200 million people worldwide. Approximately 80% of patients with acute infection will subsequently develop chronic disease , and estimated 20% to 30% will develop cirrhosis and hepatocellular carcinoma **(poynard et al ;2009).**

In addition, chronic HCV infection has been associated with a variety of extrahepatic manifestations, including autoimmune disorders. Several authors have described the relationship between chronic HCV infection and autoimmune cytopenias. Primary autoimmune haemolytic anaemia has been reported as an unusual , but recognized extrahepatic manifestation. ***(Elhajj et al; 2004).***

The most effective therapy of chronic hepatitis C is the combination of pegylated interferon alpha and ribavirin , which yields a sustained virologic response (SVR) in up to 56% of patients. Unfortunately, both drugs have significant hematological toxic effects ***(Fried et al; 2002).***

In clinical trials, significant anemia (hemoglobin < 10 g/dL) has been observed in 9-13% of patients. Moderate anemia (hemoglobin < 11 g/dL) may be seen in 30% of cases. The mean maximal reduction in hemoglobin can be as high as 3.7 g/dL within the first 2 to 4 weeks of combination therapy. ***(Manns et al; 2001).***

The mechanism of ribavirin induced anemia has been recently described . After entering red blood cells , ribavirin is phosphorylated into its active form, leading to depletion of adenosine triphosphate. Ribavirin triphosphate cannt be metabolized further in erythrocytes, so it accumulates to levels 50-fold greater than plasma concentrations. This leads to impaired antioxidant mechanisms. Resulting in membrane oxidative damage, resulting

in extravascular hemolysis. However, additional factors contribute to anemia. Ribavirin also induces anemia through the suppression of erythropoiesis, possibly as a result of erythropoietin receptor regulation. ***(Van vlierbergh et al; 2008).***

Interferon alpha contributes to anemia through inhibition of progenitor proliferation in bone marrow. Interferon may also accelerate apoptosis of erythroid progenitor cell, induce immune hemolysis, and impair renal function ***(Peck radosavijevic et al; 2002)***.

Several factors predictive of development of anemia during antiviral therapy have been reported, such as age, female gender, the amount of IFN, pretreatment platelet counts, and haptoglobin phenotype***(Hung et al; 2006).***

Certain patient populations appear more susceptible to anemia such as cirrhotic patients, HIV coinfected patients, and liver transplant recipients ***(Dieterich et al; 2002).***

The objective of management is to prevent decreases in the hemoglobin level while maintaining the optimal ribavirin dose > 10.6 mg/kg/d. the standard of management of ribavirin induced anemia has been dose reduction to 600 mg/d when the hemoglobin level decreases to < 10 g/dl and discontinuation when it deceases to < 8.5 g/d with transfusion as necessary***.(Gaeta et al;2002).***