What is the Risk of Graft Reinfection in Case of Liver Transplantation for Patients With Acute HEV or HAV Infection?

We are sharing the concerns expressed by some colleagues about the risk of graft reinfection in case of liver transplantation (LT) for patients with acute hepatitis E (HEV) or A (HAV) virus infection. It is well known that graft reinfection is nearly universal if LT is done for active hepatitis C virus (HCV) disease.¹ Before the use of hepatitis B immunoglobulin (HBIG) and/or antiviral agents for prophylaxis, hepatitis B virus (HBV) re-infection occurred in more than 80% of patients resulting in dismal graft and patient survival.^{2,3} Western literature is silent about the risk of reinfection if LT is done for HEV or HAV disease, such as acute liver failure or acute on chronic liver failure, possibly because such situations are not seen very frequently in those countries.

We looked at our records of last 10 patients who underwent LT for HEV (9) or HAV (1). All recipients were diagnosed on the basis positive IgM antibodies and viremic status was not checked. All had uneventful post-operative course with no semblance of a hepatitis like illness in post-transplant period.

Antibodies against HAV are protective and an effective vaccine is available for clinical use. There is some evidence to show that antibodies against HEV are not fully protective^{4,5} and we do not have an effective vaccine against HEV infection as yet. In one report, chronic infection with HEV (genotype 3) was described in patients after solid organ transplantation despite low levels (<7 WHO units/mL) of anti-HEV antibodies.⁵ It is our conjecture that IgM antibodies that are tested for diagnosis, may be protective against HEV (predominantly genotype 1 in India) and therefore the recipients do not suffer from graft re-infection. Situation is very different from chronic HCV and HBV infection where virus is known to interfere with the host response.⁶ HEV and HAV prevalent in this part of the world possibly do not possess the stealth and cunning of HBV and HCV⁷ and hence may not lead to reinfection of the graft. It is not clear if checking such patients for viremic status (HCV RNA) will be a worthwhile exercise at all. In any case, in patients with acute liver failure the timing of

transplantation is entirely governed by the clinical status. In acute on chronic liver failure one may have some leeway, but waiting for patient to become HEV RNA negative may lead to closure of window of opportunity. We would like to know the experience at other centers in this regard.

REFERENCES

1. Garcia-Retortillo M, Forns X, Feliu A, et al. Hepatitis C virus kinetics during and immediately after liver transplantation. *Hepatology*. 2002;35(3):680–687.
2. O'Grady JG, Smith HM, Davies SE, et al. Hepatitis B virus reinfection after orthotopic liver transplantation. Serological and clinical implications. *J Hepatol*. 1992;14:104–111.
3. Todo S, Demetris AJ, Van Thiel D, Teperman L, Fung JJ, Starzl TE. Orthotopic liver transplantation for patients with hepatitis B virus related liver disease. *Hepatology*. 1991;13:619–626.
4. Chauhan A, Dilawari JB, Sharma R, Mukesh M, Saroa SR. Role of long-persisting human hepatitis E virus antibodies in protection. *Vaccine*. 1998;16(April (7)):755–756.
5. Abravanel F, Lhomme S, Chapuy-Regaud S, et al. Hepatitis E virus reinfections in solid-organ-transplant recipients can evolve into chronic infections. *J Infect Dis*. 2014;209:1900–1906.
6. Sklan EH, Charuworn P, Pang PS, Glenn JS. Mechanisms of HCV survival in the host. *Nat Rev Gastroenterol Hepatol*. 2009;6(April (4)):217–227.
7. Wieland SF, Chisari FV. Stealth and cunning: hepatitis B and C viruses. *J Virol*. 2005;79(15):9369–9380.

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