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## **Hepatitis B Reverse Seroconversion in a Hematopoietic Stem Cell Transplant Recipient**

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Hematology and transplantation reports have showed reactivation of hepatitis B in individuals with previous immunity who undergo hematopoietic stem cell transplantation. As stated in Fan et. al.<sup>1</sup>, immunosuppression at the time of transplantation can lead to the disappearance of anti-HBs or anti-HBe which would protect against reactivation and re-infection by hepatitis B.

This patient is a 45 year old Ethiopian born male physician who has a history of CML. After treatment and a relapse, the patient received a bone marrow transplant from his sister. Prior to the transplant, the patient's hepatitis serologies showed evidence of previous infection, but clearance of hepatitis B. The patient received the bone marrow transplant from his sister, who was never exposed or immunized to hepatitis B. Shortly after the BMT, the patient's transaminases were transiently elevated. This was attributed to graft-versus-host disease. However, two years after the bone marrow transplant, the patient's wife was found to have acute hepatitis B infection. At this time, in light of his wife contracting apparent acute hepatitis B, her husband, our patient, was subsequently tested and found to have normal AST and ALT (32 and 23, respectively), but positive hepatitis B surface antigen and e antigen, with negative core antibody. On exam he was asymptomatic.

Active HBV infection may be transmission from the donor, or possibly reactivation of underlying latent disease at time of immunosuppression<sup>1</sup> as shown by this case. As mentioned by Goyama et. al., reverse seroconversion of HBV is not an uncommon side effect of hematopoietic stem cell transplantation with rates of transmission ranging from 7 to 12%<sup>2</sup>. The lack of anti-HBs in the donor and the decrease or disappearance of anti-HBs or anti-HBe lead to these transmission rates.

Nagler et. al. reported a loss of HBV immunity in 37% of patients who were immunized with documented seroconversion prior to autologous bone marrow transplant (BMT). As this article stresses, immunization to HBV should be considered standard procedure

prior to autologous BMT.<sup>3</sup> In order to reduce transmission rates we should ensure that potential donors have been previously immunized to HBV. Lindemann et. al. successfully showed that humoral and cellular immunity to HBV can be transferred from vaccinated donors to recipients.<sup>4</sup> Vaccinating all potential donors will avoid active infection of HBV due to reverse seroconversion and transfer immunity from donor to recipient.

<sup>1</sup> Fan, F.S.; Tzeng C.H.; Yeh, H.M.; Chen, P.M.; Reverse Seroconversion of Hepatitis B virus infectious status after allogenic bone marrow transplantation from a carrier donor, Bone Marrow Transplantation 1992, Vol.10, pgs. 189-191.

<sup>2</sup> Goyama, S.; Kanda, Y.; Nannya, Y.; et. al., Reverse Seroconversion of Hepatitis B Virus after Hematopoietic Stem Cell Transplantation, Leukemia and Lymphoma, 2002, Vol. 43 (11), pgs. 2159-2163.

<sup>3</sup> Nagler, A.; Ilan, Y.; Adler, R., et. al.; Successful immunization of autologous bone marrow transplantation recipients against hepatitis B virus by active vaccination, Bone Marrow Transplantation, 1995, Vol. 15., pgs. 475-478.

<sup>4</sup> Lindemann, M.; Barsegian, V.; Runde, V. et. al; Transfer of Humoral and Cellular Hepatitis B Immunity by Allogenic Hematopoietic Cell Transplantation, Transplantation, Vol. 75, No. 6, pgs. 833-838.