Sequential Therapy with PEG-IFN alpha-2a and Tenofovir in a Hepatitis B Virus-Infected African Man

Francesca Cainelli MD[1,2] and Sandro Vento MD[2]

[1]Department of Medicine, Princess Marina Hospital, and [2]Department of Internal Medicine, University of Botswana, Gaborone, Botswana

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A 44 year old black African man negative for anti-human immunodeficiency virus and anti-hepatitis C virus (HCV), who had been a blood donor for many years, was found to be HBsAg positive and to have increased liver enzyme levels during a pre-donation screening in September 2013. His last blood donation had been in March 2013.

He presented in June 2014 at the Liver Clinic, Princess Marina Hospital in Gaborone, Botswana. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels were elevated (234 IU/L, normal < 34, and 251 IU/L, normal < 41, respectively), a liver ultrasound was normal and a transient elastography using Fibroscan™ (Echosens, Paris, France) resulted in 7.7 kPa, indicating a F1-F2 liver fibrosis stage.

In September 2014, AST was 135 IU/L and ALT 172 IU/L. Hepatitis B Virus (HBV)-DNA was > 1.7×10^8 IU/ml (COBAS TaqMan 48 Real Time PCR, Roche). Pegylated interferon (Peg-IFN) alpha-2a was started at a dose of 180 µg weekly. In November 2014 AST level had risen to 1008 IU/L and ALT to 841 IU/L; the Peg-IFN dose was reduced to 135 µg weekly due to neutropenia (600/µl). In December 2014 Peg-IFN alpha-2a was no longer available and was replaced with tenofovir 300 mg daily. In February 2015 aminotransferases were both normal (AST 28 IU/L, ALT 25 IU/L) and HBV-DNA level was reduced to 61 IU/ml. In March, HBsAg and HBeAg had become negative and anti-HBe was positive. Tenofovir was discontinued in May 2015 when AST was 26 IU/L, ALT 19 IU/L, HBV-DNA had become undetectable (< 20 IU/mL) and HBV markers were the same as in March 2015. AST and ALT levels remained normal in July 2015.

Our patient acquired HBV infection between March and August 2013 and one year later showed signs of active chronic liver disease. He started treatment with Peg-IFN when HBV-DNA levels were extremely high, making it more difficult to respond to therapy [1,2]. Nevertheless, he did respond to interferon treatment (despite a dose reduction necessitated by neutropenia) with an eight- and fivefold increase in AST and ALT levels respectively, indicating immune mediated necrosis of infected hepatocytes. After only 3 months of treatment, we were forced to replace Peg-IFN with tenofovir and 3 months later anti-HBe seroconversion had occurred and serum HBsAg was no longer detectable. Tenofovir was used for 5 months and discontinued when HBV-DNA was undetectable.

Although the follow-up is short, our case suggests that in cases of chronic hepatitis B where the infection is relatively recent, a short-term treatment with Peg-IFN can be effective also when viral replication is high, and that continuation treatment with a potent nucleoside analogue with a very high barrier to resistance can allow even HBsAg loss, an uncommon event during, or shortly after, treatment for chronic hepatitis B [3-5].

Correspondence
Dr. S. Vento
Dept. of Internal Medicine, University of Botswana, Private Bag 00713, Gaborone, Botswana
Phone: (267-3) 554-190
email: ventosandro@yahoo.it

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"Men build too many walls and not enough bridges"

Isaac Newton (1642-1727), English physicist, mathematician and philosopher considered a key figure in the scientific revolution. Newton made seminal contributions to optics, and he shares credit with Gottfried Leibniz for the development of calculus