Falsely Elevated Serum \textbf{Beta-HCG} Levels in Patients with Aplastic Anemia Treated with Antithymocytic Globulin

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Beersheva

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A serum \textit{ß}-HCG level greater than 5 mU/ml is consistent with a diagnosis of pregnancy in a woman of reproductive age with delayed menses [1]. However, elevated serum levels of \textit{ß}-HCG have also been reported in nonpregnant patients with either trophoblastic or nontrophoblastic neoplasms [2].

We report falsely elevated \textit{ß}-HCG levels in two patients following treatment with antithymocytic globulin (ATG) for aplastic anemia. The first patient, a 24-year-old woman with secondary amenorrhea had a \textit{ß}-HCG level of 90 mU/ml 3 weeks after receiving 1 g/day of ATG for 5 days and a level of 12 mU/ml 4 weeks later while in partial remission. Pregnancy and other known causes of high \textit{ß}-HCG levels were excluded by clinical examination and an ultrasound study of the pelvis. The second patient, a 26-year-old man had a serum \textit{ß}-HCG level of 293 mU/ml 3 weeks after receiving 1.0 g/day of ATG for 10 days and 13 mU/ml 3 weeks later while in partial remission.

When \(10^{-6} - 10^{-5}\) dilutions of ATG (Fresenium, FRG) were tested with the \textit{ß}-HCG assay (Serono, Switzerland), \textit{ß}-HCG was highly positive at the \(10^{-6}\) dilution and undetectable at the \(10^{-5}\) dilution.

Given a calculated half-life of the material measured as \textit{ß}-HCG of 8 days and assuming a volume of distribution of ATG of 3 liters, the dose of ATG required in order to achieve a titer of \textit{ß}-HCG of 90 mU/ml (patient 1) or of 293 mU/ml (patient 2) at day 21 would be \(\frac{0.55}{0.55}\) and \(\frac{1.79}{1.79}\) g, respectively. Thus, the patients received a dose of ATG large enough to account for the falsely elevated \textit{ß}-HCG levels. Further studies are in progress to define the reason for the cross-reactivity of ATG in the \textit{ß}-HCG assay and to determine whether it is (1) peculiar to patients with aplastic anemia and (2) specific for this \textit{γ}-globulin.

References
