Comparison of Human Chorionic Gonadotropin and Pregnancy-Specific β_1 -Glycoprotein in Nonpregnant Patients Undergoing Hemodialysis

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Dear Sir,

We were very interested in the paper of Schwarz et al. [7] presenting elevated values of human β -chorionic gonadotropin (β -HCG) in woman undergoing hemodialysis despite the absence of pregnancy.

The mechanisms involved were a reduced metabolic clearance rate of gonadotropins [1, 2], uncontrolled production [1, 3] and perhaps ectopic production. The authors concluded that β -HCG determination is not a reliable pregnancy test in women with chronic renal failure.

In order to find a specific pregnancy test, we measured both HCG and pregnancy-specific β_1 -glycoprotein (β_1 -SP_i) in 18 nonpregnant women and 10 men undergoing hemodialysis. Both proteins are secreted by the tro-phoblast and may be detected within a few days after the ovum implantation [4]. The metabolic clearance rates as well as the half-lives are similar (1–2 days). β_1 -SP_i is a single-chain polypeptide (100 kilo daltons) and is filtered only to a very small extent through the glomerular membrane [5]. HCG is a smaller molecule (36 kilo daltons), and its elimination depends on the renal filtration [2].

These differences suggest that β_1 SP_i could be more specific to detect an early pregnancy in these patients. Blood samples were taken before dialysis and HCG and β_1 -SP_i measured by radioimmunoassays. The limits of detection are 2 and 0.001 ng/ml, respectively. As shown in table I, only women displayed detectable values of HCG. This is in agreement with Schwarz et al. [7]. In nonmenopausal women, only 1 patient presented an increased HCG concentration (20 ng/ml); pregnancy may be ruled out because the patient underwent hysterectomy.

Table I. Results of HCG and β_1 SP_i determinations in the serum of menopausal women (n = 11), nonmenopausal women (n = 7) and men (n = 10)

	Nonmenopausal women	Menopausal women	Men
HCG < 2 ng/ml	6	7	10
> 2 ng/ml	1	4	0
β_1 -SP _i < 0.001 ng/ml	7	11	9
> 0.001 ng/ml	0	1	1

In menopausal women, 4 patients showed borderline detection HCG values (3.7, 2.4, 2.2 and 3.7 ng/ml), β_2 -SP, remained undetectable in all samples except in 1 male patient (0.0018): such an ectopic secretion of β_2 -SP, in men has been previously reported by Bohn [6]. Thus, β_2 -SPt displays a better reliability than HCG.

In conclusion, some women with chronic renal failure present a positive series of HCG values erroneously indicating a pregnancy. In these patients, serum β_2 -SPt determination will be helpful to confirm or exclude the presence of trophoblastic tissue.

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