Prostatic Cancer in a Patient on Long-Term Hemodialysis

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Dear Sir,

Since Matas et al. [1] first described nine cancers among uremic patients, various neoplasms have been reported to occur in patients on hemodialysis [2, 3]. Recently, a possible relationship between cancer and hemodialysis has been emphasized [4]. However, the literature dealing with prostatic cancer in hemodialysis patients is scanty [5]. Herein we report a case of prostatic cancer on long-term hemodialysis.

A 61-year-old Japanese male was admitted to our hospital with a 2-month history of lower abdominal and left leg pain. His previous history revealed gout at the age of 49 years, and hemodialysis had been started 68 months ago due to the end-stage renal failure derived from gouty kidney. Physical examination disclosed lymphadenopathies of the left inguinal areas. The penis, epididymides, spermatic cords and testes were normal, but the prostate was enlarged with hard consistency.

A hemogram revealed leukocytes of 6,800/mm³ (normal 4,000–9,000), hemoglobin 9.3 g/dl (normal 14.0–18.0), erythrocytes 351×10⁴/mm³ (normal 430–570 × 10⁴), hematocrit 32% (normal 40–54) and platelet count 267,000/mm³ (normal 130,000–340,000). Serum sodium was 130 mEq/l (normal 135–146), potassium 4.4 mEq/l (normal 3.2–4.5), chloride 95 mEq/l (normal 96–110), calcium 7.8 mg/dl (normal 8.8–10.2) and phosphorus 4.3 mg/dl (normal 2.9–4.7). Blood urea nitrogen was 56 mg/dl (normal 9–25), serum creatinine 9.3 mg/dl (normal 0.5–1.5), uric acid 4.7 mg/dl (normal 2.0–7.6) and alkaline phosphatase 201 IU/l (normal 30–115). Serum prostatic acid phosphatase (PAP), γ -semi-noprotein (γ -SM) and prostatic specific antigen (PSA) were elevated at 1,300 ng/ml (normal less than 3.0), 45 ng/ml (normal less than 4.0) and 598 ng/ml (normal less than 3.6), respectively.

Fig. 1. A CT scan of the pelvic cavity shows an enlarged prostate with calcification.

Fig. 2. The nuclei show anaplasia and mitotic figures are observed. HE. × 250.

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A CT scan of the pelvic cavity showed enlargement of the prostate with calcifications (fig. 1). Bone scintigraphy using ^{99m}Tc -methylene diphosphonate revealed many accumulations of radio-pharmaceutical. A transperineal needle biopsy of the prostate disclosed a poorly differentiated adenocarcinoma (fig. 2).

The patient was treated with bilateral subcapsular orchiectomy and was given 600 mg diethylstilbestrol diphosphate daily. Two months later, serum PAP, γ -SM and PSA were reduced at 31, 21 and 22 ng/ml, respectively. Improvement of the left inguinal lymphadenopathies was observed.

The incidence of prostatic cancer is about 10 per 100,000 population (0.01%) in Japan [6]. In our hospital, only 1 case has been observed among the 1,608 male patients on hemodialysis (0.06%), but this rate is approximately six times higher than that of the general population.

Several factors concerning the occurrence of cancer in uremia have been proposed [3, 7].

However, clear demonstration for these factors is still lacking. In patients with prostatic cancer, the plasma level of testosterone is significantly elevated compared with that of the controls [8]. To the contrary, the plasma testosterone level significantly decreases in patients on hemodialysis [9]. We failed to obtain the plasma level of testosterone from the present case before hormone therapy, but hormonal manipulation resulted in a decrease in tumor markers (PAP, γ -SM and PSA). This suggests that androgen plays an important role in the development of prostatic cancer in hemodialysis patients.

Carcinoma of the prostate is rare before the age of 60 years and increases in frequency thereafter. The occurrence of prostatic cancer has increased over the years [10]. Improvement of clinical care for end-stage renal disease enables hemodialysis patients to survive for a long time. The average age of male patients at the initiation of dialysis is less than 60 years in most hospitals [4]. In our hospital, too, the average age was 47 ± 16 years. The incidence of prostatic cancer in hemodialysis patients is expected to increase. In our case, unfortunately, carcinoma of the prostate was advanced. Periodic examination of the prostate should be performed for early detection of the cancer, especially in aged male patients on hemodialysis.

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