Serum prostate-specific antigen (PSA) values above 10 ng/ml are considered highly sensitive and specific for prostatic carcinoma in the absence of prostatic inflammation or trauma. However, in rare instances, non-prostatic malignancies have also been associated with raised serum PSA values. We have encountered a patient with increased serum PSA concentration measured by monoclonal antibody assay who had no evidence of prostatic malignant involvement, but suffered from colon cancer. Before operation for colon cancer his PSA was always over 30 ng/ml on several examinations. After total removal of colon cancer serum PSA level fell down to 1.2 ng/ml. Although immunohistochemical staining of colon cancer with monoclonal PSA antibody was not performed, some relationship between raised PSA and colon cancer is strongly suspected. Substances like serine protease which can cross-react with the PSA antibody might be produced by malignant tumour of non-prostatic origin.

Introduction

Prostate-specific antigen (PSA) is a serine protease that was isolated from prostatic tissue by Wang and associates in 1979 [1]. This unique glycoprotein is specific for and produced by all types of prostatic epithelial tissue. Since the initial identification and characterization of this prostatic marker, numerous researchers have investigated the clinical properties of serum PSA values. An increased serum PSA concentration was found to have great sensitivity for prostatic cancer. Currently, serum PSA is widely accepted in clinical practice as the most useful tumour marker for prostatic malignant disease [2].

With increasing clinical experience and basic science research, however, the usefulness of serum PSA has been further refined. In addition to adenocarcinoma of the prostate, many non-malignant conditions such as benign prostatic hyperplasia, acute or chronic prostatitis, and prostatic infarction can increase the serum PSA concentration [2]. PSA values above 10 ng/ml are considered highly sensitive and specific for prostatic carcinoma in the absence of prostatic inflammation or trauma. However, in rare instances, non-prostatic malignancies (extrapulmonary small-cell carcinoma or renal cell carcinoma) have also been associated with raised serum PSA values [2, 3, 4]. Recently, Bilgrami et al. reported a case of increased monoclonal serum PSA level in adenocarcinoma of the lung [5].
We have encountered a patient with increased serum PSA concentration who had no evidence of prostatic malignant involvement, but suffered from colon cancer. To our best knowledge, this case is the first description in the urological literature of a possible relationship between raised serum PSA measured by monoclonal antibody assay and malignancy of non-prostatic origin.

Case report

A 67-year-old man was referred to our hospital because of persistently increased serum PSA values detected at preoperative screening. Serum PSA levels were determined by radioimmunoassay based on the two-antibody method with commercially available reagents (Eiken Chemical Co. Ltd., Tokyo, Japan). The patient's serum PSA level was 37 ng/ml (normal range 1.0 to 3.0 ng/ml). This concentration was determined before a digital rectal examination. He noticed blood in the stool one month before urologic consultation. He visited his family doctor and was diagnosed as having cancer in the ascending colon. He was referred to a general surgeon and was scheduled for right hemicolectomy. There was no evidence of metastatic lesion based on image study.

Serum PSA was measured again before operation with no intervening rectal examination. The second serum concentration was 38 ng/ml. Furthermore, three additional consecutive measurements of serum PSA were carried out and all of them still showed values above 30 ng/ml. The patient then underwent transrectal ultrasonography of the prostate which yielded a normal result. Nevertheless, the patient underwent transrectal ultrasound-guided biopsy of the prostate. Six cores of tissue, three from each lobe, were removed and examined in their entirety. The biopsy specimens exhibited only benign prostatic hyperplasia; no malignant involvement, prostatic intraepithelial neoplasia, acute or chronic prostatitis, or ischaemic changes consistent with prostatic infarction could be identified. The only symptoms relating to the genitourinary tract were mild nocturia and a mild decrease in the force and calibre of the urinary stream. Results of physical examination were unremarkable; digital rectal examination revealed a smooth, soft, non-tender, moderately enlarged prostate. Results of urinalysis, cytology and urine culture also were negative. Cystoscopic finding was almost normal. Intravenous urography was performed and showed normal urinary tract. Renal and liver functions were normal. Other tumour markers related to colon cancer, such as CEA (carcino-embryonic antigen), AFP (alpha fetoprotein), Ca-19-9, were within normal limits.

He underwent right hemicolectomy. Colon cancer was confined within the submucosal tissue and size of tumour was 3 × 2 cm. Pathological diagnosis was moderately differentiated adenocarcinoma of the colon. Unfortunately, immunohistochemical staining of colon cancer with monoclonal PSA antibody could not be performed due to unavailability of PSA antibody. However, serum PSA levels went down to 1.2 ng/ml which was within normal limits.