Acta Oncologica Vol. 30 No. 2 1991

FROM THE DEPARTMENT OF UROLOGY AND RADIOBIOLOGY, KAROLINSKA HOSPITAL, STOCKHOLM, SWEDEN.

MODAL DNA-VALUES IN PROSTATE CANCER PATIENTS WITH DEFERRED THERAPY OR ENDOCRINE THERAPY

J. ADOLFSSON and B. TRIBUKAIT

Abstract

Modal DNA-values were assessed with flow cytometry in 269 patients with newly detected untreated prostate cancer. One hundred and seventy-two patients with low-grade, low-stage, non-metastasized cancers were followed without treatment and in this group initial tumor ploidy had no prognostic value. Ninety-seven patients with clinically more advanced prostate cancers were subjected to endocrine therapy and in this group ploidy was prognostic regarding cancer-related survival.

Key words: Prostate cancer, modal DNA-value, deferred therapy, endocrine therapy, survival.

The modal DNA-value of prostate cancer has been suggested to be prognostic regarding progression and survival in patients subjected to endocrine therapy (1, 2). Also a correlation between modal DNA-value and more conventional prognostic parameters as local stage and grade has been found (3, 4).

Material and Methods

During 1978–1982, 269 patients with newly detected untreated prostate cancer were biopsied with fine-needle aspiration technique. The tumors were graded according to Esposti (5) and the local tumor stage categorized according to the TNM-system. Part of aspirate was taken for flow cytometrical analysis and the modal DNA-value was measured (for method see ref. 6).

Of the patients 172 were included in a surveillance protocol and 97 patients received endocrine therapy. The choice of therapy was based on clinical grounds and no randomization was performed.

The group with no therapy was followed closely and treatment was initiated if the tumor showed rapid local progression or if metastases developed. Median age in this group was 69 (38–88) years and the tumors were generally of low malignancy grade and stage and no patient had metastases. Median observation time was 84 (8–127) months. Thirteen of these patients had T1, 109 T2 and 50 T3 tumors; 106 patients had well, 64 moderately and 2 poorly differentiated tumors, whereas 78 of the tumors were diploid, 70 tetraploid, and 24 aneuploid.

In the group of 97 patients subjected to endocrine therapy the median age was 71 (53–84) years. The tumors of these patients had generally a higher malignancy grade and stage compared to the surveillance group and 42 patients had metastases at diagnosis. Also a larger proportion of the patients had aneuploid tumors compared with the untreated group; 55 patients had no metastases and 2 of these patients had T1, 20 T2 and 33 T3 tumors whereas 42 had T1–3, M1 tumors. Nineteen patients had well, 57 moderately and 21 poorly differentiated tumors; 28 of the tumors were diploid, 34 tetradiploid, and 35 aneuploid. Median observation time was 55 (4–124) months. In the total series of 269 patients, 144 had clinically localized cancer at diagnosis; 122 were included in the surveillance protocol and 22 were subjected to endocrine therapy.

Results

During the observation time 32 patients developed metastases and 19 died of prostate cancer in the group that initially were kept under surveillance. In this group of

Presented at the Conference on Early Prostatic Cancer. The WHO Collaborating Centre for Urological Tumours, Karolinska Hospital, Stockholm, March 21–23, 1990.

Accepted for publication 1 October 1990.

patients, ploidy had no prognostic significance regarding time to development of metastases or time to cancer death.

In the group subjected to endocrine therapy metastatic status was the single most important prognostic factor. When analysed as single parameter, ploidy was highly prognostic regarding cancer-related survival in the total group. A similar prognostic significance of ploidy was found when the subgroup of patients with no metastases at diagnosis was analysed. In the patients who already at the entry had metastases, ploidy had no prognostic importance.

In the 144 patients with clinically localized prostate cancers, 21 progressed with metastases and 13 died of prostate cancer during the observation time.

Ploidy was prognostic regarding progression with metastases whereas analysis regarding cancer-related survival was not possible due to the low number of patients who died of prostate cancer.

Discussion

The modal DNA-value of prostate cancers has been suggested to be of prognostic value in patients with endocrine therapy (1, 2). In patients subjected to radical prostatectomy an increased aneuploidy has been correlated to infiltration in the seminal vesicles. The ploidy was also prognostic regarding disease-free survival (7).

In the present study, ploidy had a prognostic significance regarding development of metastases and cancer-related survival in patients with prostate cancer. In patients with clinically localized low-grade prostate cancer, the prognostic value of ploidy was less pronounced compared to patients with high-grade, high-stage cancer without metastases. In patients with metastases at diagnosis the prognosis seemed to be poor irrespective of the ploidy of the local prostate cancer.

Corresponding author: Dr Jan Adolfsson, Department of Urology, Karolinska Hospital, P.O. Box 60500, S-104 01 Stockholm, Sweden.

REFERENCES

1. Tavares AS, Costa J, Costa Maia J. Correlation between ploidy and prognosis in prostatic carcinoma. J Urol 1973; 109: 676–9.
2. Zetterberg A, Esposti P-L. Prognostic significance of nuclear DNA levels in prostatic carcinoma. Scand J Urol Nephrol 1980; (Suppl. 55): 53–8.
3. Rönström L, Tribukait B, Esposti P-L. DNA pattern and cytological findings in fine-needle aspirates of untreated prostatic tumors. A flow-cytofluorometric study. Prostate 1981; 2: 79–88.
4. Tribukait B. Flow cytometry in assessing the clinical aggressiveness of genito-urinary neoplasms. World J Urol 1987; 5: 108–22.
5. Esposti PL. Cytologic malignancy grading of prostate carcinoma by transrectal aspiration biopsy. Scand J Urol Nephrol 1971; 5: 199–209.
6. Tribukait B. Flow cytometry in surgical pathology and cytology of tumors of the genito-urinary tract. In: Koss LG, Coleman DV, eds. Advances in clinical cytology. Masson Publ USA Inc, 1984; 2: 163–89.
7. Lee SE, Currin SM, Paulson DF, Walther PJ. Flow cytometric determination of ploidy in prostatic adenocarcinoma: A comparison with seminal vesicle involvement and histopathological grading as a predictor of clinical recurrence. J Urol 1988; 140: 769–74.