

# Adenocarcinoma of the prostate treated by definitive high-dose external radiotherapy

Heidi Stranzl,<sup>1</sup> R. Mayer,<sup>1</sup> P. Willfurth,<sup>1</sup> K. Pummer,<sup>2</sup> K.W. Preidler,<sup>3</sup>  
U. Prettenhofer,<sup>1</sup> G. Stuecklschweiger,<sup>1</sup> A. Hackl<sup>1</sup>

Medical School of Graz: <sup>1</sup>Dept. of Radiotherapy, <sup>2</sup>Dept. of Urology, <sup>3</sup>Dept. of Radiodiagnosis, Graz, Austria

*Between 1986 and 1994, 436 patients with localized adenocarcinoma of the prostate were treated with external beam radiation at our department. After excluding those who received a tumor dose less than 64 Gy and had insufficient follow-up data or had previous prostatectomy, we analysed a total of 384 patients (101 T1, 224 T2, 48 T3, 11 T4 - reclassified to UICC 1922). The median age was 69.7 years, the median follow-up 54.4 months. Patients with locally advanced disease were treated by pelvic fields (50.4 Gy / 1.8 Gy), followed by prostate-field conedowns (16-20 Gy / 2 Gy): patients with early stage disease received only prostate field radiation (66-70 Gy / 2 Gy). Five-year overall survival was 81.6% for T1, 63.8% for T2 and 64.1% for T3/4. Five year disease-free survival was 89.3% for T1, 77.2% for T2 and 56.9% for T3/4. Thirty-one patients (8%) had local recurrence, 61 patients (15%) developed distant metastases. We conclude that high dose external beam radiotherapy is very effective in local control for adenocarcinoma of the prostate but, unfortunately, many patients will continue to die from metastases and intercurrent disease.*

**Key words:** prostatic neoplasms; radiotherapy; local control; survival rate

## Introduction

Definitive external beam radiation (EBR) is an accepted modality as an alternative to surgery in the management of patients with localized carcinoma of the prostate.<sup>1-4</sup> We present the results of a retrospective analysis including 384 patients with adenocarcinoma of the prostate.

## Materials and methods

In the period from February 1986 to May 1994, 384 evaluable patients with localized adenocarcinoma of the prostate were included in our study. The

median age of the patients was 69,7 years (47 - 88 years). Pathologic confirmation of prostate cancer was obtained in all patients. In 328 patients, a transurethral resection of the prostate (TURP) was performed. Tumors were staged according to the TNM system (reclassified to UICC 1992). One hundred one patients were classified as T1, two hundred twenty four as T2, forty eight patients as T3, and eleven as T4 tumors. The median follow-up for all patients was 54,4 months (1,3 - 161,3 months).

External beam irradiation was delivered with 23 MeV photon beams by linear accelerators with a continuous course of 50.4 Gy / 1.8-2 Gy/day, 5-days a week to the pelvic lymph nodes in a four-field technique, followed by a boost to the prostate up to a total dose of 66-70 Gy using a three-field technique. Patients with a low risk for nodal metastases received treatment to the prostate and seminal vesicles alone with an adequate margin to 66-70 Gy / 2 Gy daily. The dose was prescribed to the 90 or 93% isodose. Routinely, treatment was based on CT -

Correspondence to: Dr. Heidi Stranzl, MD, Medical School of Graz, Department of Radiotherapy - Division of Radiology, Auenbruggerplatz 32, A-8036 Graz, Austria.

UDC: 616.65-006.6:615.849.1

planning; individually manufactured paraffin blocks were used to protect maximally normal tissue.

Follow-up investigations comprised rectal examination, acid and prostatic phosphatase examination and/or prostate-specific antigen (PSA) - evaluation at 3-month intervals during the first three years and at 6-month intervals later on. Abdominal ultrasound and chest radiographs were performed at 6-month intervals, bone scans and CT of the pelvis were performed if clinical findings suggested progression of the disease.

### Results

Actuarial 5-year overall survival rates according to UICC - stages T1, T2 and T 3-4 disease were 81.6%, 63.8%, and 64.1%, respectively.

The corresponding 5-year disease-free survival rates according to UICC - stages T1, T2, and T3-4 were 89.3%, 77.2 % and 56.9%, respectively. In 31 patients (8%), local failure was seen and in 61 patients (15.9%), distant metastases were observed.

### Conclusion

Our results revealed megavoltage EBR using modern treatment facilities as a safe and effective treatment modality for loco-regional control of prostate cancer.

### References

1. Ray GR, Cassady JR, Bagshaw MA. Definite radiation therapy of carcinoma of the prostate - a report on 15 years of experience. *Radiology* 1973; **106**: 406-18.
2. Zietman AI, Coen JJ, Dallow KC, Shipley WU. The treatment of prostate cancer by conventional radiation therapy: an analysis of long-term outcome. *Int J Radiat Oncol Biol Phys* 1995; **32**: 287-92.
3. Pollack A, Zagars G. Radiotherapy vs. surgery for prostate cancer: an age old question. *Int J Radiat Oncol Biol Phys* 1996; **35**: 407-9.
4. Perez CA, Lee HK, Georgoiou A, Logsdon M, Lai P, Lockett MA. Technical and tumour-related factors affecting outcome of definitive irradiation for localized carcinoma of the prostate. *Int J Radiat Oncol Biol Phys* 1993; **26**: 581-91.