GLEASON GRADING OF CARCINOMA PROSTATE AT NAWABSHAH MEDICAL COLLEGE / HOSPITAL

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ABSTRACT
Objective: *To evaluate the Gleason Score and pathological grading of patients with Carcinoma of the Prostate amongst prostatectomy specimen.*
Design & Duration: *A retrospective study from January 1996 to December 2005.*
Setting: *Nawabshah Medical College Hospital, Nawabshah.*
Patients: *A total of 595 patients who underwent prostatectomy.*
Methodology: *Detailed data of the patients was retrieved from the case sheets, ward records and the Pathology Department by manual search, and analyzed.*
Results: *Amongst the total 595 cases, the age range was 50-90 years with a mean age of 65.08 years. Out of the 595 prostatectomy specimen submitted during the study period, 46 (7.73%) had adenocarcinoma. According to the Gleason Score 18 (39.13%) cases had well differentiated (Score 2-4), 24 (52.17%) had moderately differentiated (Score 5-7) and four (8.69%) cases had poorly differentiated (Score8-10) adenocarcinoma.*
Conclusion: *Gleason Score is a universally accepted prognostic indicator of Carcinoma Prostate. Pathologists must report consistently for the better management of the condition.*

KEY WORDS: *Prostatectomy, Carcinoma Prostate, Gleason Grading*

INTRODUCTION

J. Adams, an English surgeon, was the first clinician to describe prostatic cancer in 1853. At that time it was an extremely rare disease, though now it is quite common and an escalating international health problem[1]. Prostate cancer is the second commonest life threatening malignancy in men; 90% of the cases are adenocarcinomas[2]. Its accurate world wide prevalence is difficult to estimate due to absence of data from developing countries. In 2005 around 232,090 new prostate cancer cases were reported in USA alone[3]. There were 679,000 new cases and 221,002 deaths attributed to prostate cancer world wide in 2002[4]. The trend varies across populations and continents[5], while mortality exhibits an over 20-fold variation[6]. It has been calculated that the life time risk for a man in a western society of developing clinical disease is about 10% and the chances of dying from the disease is about 3%[7].

Grade may be defined as a degree of severity in illness[8]. Histological grade of a neoplastic process is often equated with the degree of differentiation of the neoplastic cells. In the last three quarters of the twentieth century, over forty histological grading systems for prostatic carcinoma have been proposed. These systems have typically utilized differentiation capacity, architectural growth patterns, mitotic activity and nuclear abnormalities in the generation of a histological grading[9].

The Gleason grading system was developed by Dr. Donlad F. Gleason, a pathologist in Minneosta, and the

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members of Veterans Administration Co-operative Urological Research Group (VACURG)[10] in 1966 for use as an objective means of determining the aggressive nature of an individual tumour. Gleason stated that all classification systems were necessarily subjective and it is difficult to know if one was following another's technique accurately, hence he together with his colleagues developed this classification[11].

Gleason grading system defines five histological patterns or grades with decreasing differentiation. The primary and secondary pattern i.e. the most prevalent and the second most prevalent pattern are added to obtain a Gleason score or sum[1,2], under this scheme the most well-differentiated tumour have a Gleason score of 2 (1+1) and the least differentiated tumors merit a score of 10 (5+5)[12].

It seems safe to say that the Gleason system is currently the "gold standard" of prostate cancer grading[11,13]. Its use has been recommended by the WHO "blue book"[14] and the AJCC/UICC cancer staging manual[15]. It is designed for application to all untreated prostatic glandular carcinoma[16]. Sqamous and urothelial (transitional) cell carcinoma of the prostate should not be graded by this method[17]. Gleason method should be performed in all prostatic tissue samples but not advisable in fine needle aspiration biopsy samples of prostatic carcinoma since epithelial and stromal relationships are not preserved[18].

Assessment of Gleason grade to larger tissue samples including TURP (Trans-Urethral Resection of Prostate) chips and open (simple) and radical prostatectomy specimens is often more straight forward than in needle biopsy cases. Of importance a small amount of carcinoma in needle biopsy tissue should not be equated with well-differentiated Gleason sore of 2-4 adenocarcinoma. A distinctive characteristic of carcinoma grade in TURP chips and open (simple) enucleation prostatectomy specimens is that well-differentiated Gleason score 2-4 are much more common in these tissue specimens compared to needle biopsies.

Table I. Annual Incidenc of Ca. Prostate

Year	Prostatectomy Specimen	Adenocarcinoma Prostate
1996	30	2
1997	32	2
1998	34	2
1999	44	3
2000	46	3
2001	51	4
2002	100	8
2003	78	7
2004	75	6
2005	105	9
Total	595	46

The ultimate purpose of any staging and grading system in malignant disease is to portend prognosis and direct therapy on individual basis. The aim of the present study was to analyze the prognostic value of Gleason score of the prostatectomy specimens in prostate cancer.

PATIENTS & METHODS

This retrospective study was conducted on 595 prostatectomy specimen in the Pathology Department of Nawabshah Medical College & Hospital, submitted by the Departments of Urology and Surgery from January 1996 to December 2005 (Table I).

Their data was retrieved by a manual search from case sheets and ward records, and compiled. The patients were divided into three groups viz. well-differentiated, moderately differentiated and poorly differentiated according to the sum of Gleason Scores (Table II). Both open prostatectomy and transurethral resection specimens were included in the study, whereas needle biopsy and fine needle aspiration biopsy (FNAC) specimen were excluded.

RESULTS

Out of the total 595 prostatectomy specimen submitted during the study period, 46 (7.73%) had adenocarcinoma. Nineteen specimen were from transurethral resection of the prostate while 27 were from open prostatectomy. The ages of the patients ranged from 50-90 years, with a mean age of 65.08 years.

The Gleason scoring and the grading of the biopsy spe-

Table II. Gleason Score of Ca. Prostate

Tumour Grading	Gleason Score
Well differentiated	2 - 4
Moderately differentiated	5 - 7
Poorly differentiated	8 -10

cimen are shown in Table III.

DISCUSSION

Gleason grading system is a powerful prognostic tool that help in the treatment of men with prostatic cancer[19]. Gleason scoring system like all histological grading methods possesses an inherent degree of subjectivity; intra-observer and inter-observer variability does exit. Histological grade and Gleason score should always be included in the biopsy report[19]. The knowledge of natural history of the prostate cancer i.e. the prognosis with no cure treatment is of interest. There is extensive literature on many aspects of this disease, though relatively little has been written on its grading and the prognostic value.

In the present study Gleason grading of prostatic adenocarcinoma based on the glandular architecture has been used. According to it majority (52.17%) of the tumors were moderately-differentiated (Gleason 5-7), 39.13% well-differentiated (Gleason 2-4) and 8.70% poorly-differentiated (Gleason 8-10) as depicted in Table III. This is similar to the findings of other series also[20-22]. This histological grading separates prostate cancer in two groups with highly different rates of progression and dissemination during a given period. Any grading system that uses diagnostic biopsy specimens as a guide to management decisions depends upon a strong histological correlation between the biopsy and the tumour[23].

Gleason grading of the carcinoma outside the prostate and in the metastatic deposits has been reported, but it was not originally designed for this purpose as it is based upon epithelial (carcinoma) stromal architectural relationships within the prostate[24]. Gleason system is popular because it is easy to learn and reproduce, and correlates well with the clinical course in different groups of patients. Its strong prognostic significance[25] enables the patients and clinicians to make a more informed decision about their treatment algorithm.

Table II. Gleason Score of Ca. Prostate

Grading	Gleason Score	No. (%)
Well differentiated	2 - 4	18(39.13)
Moderately differentiated	5 - 7	24(52.17)
Poorly differentiated	8 -10	4(08.70)

CONCLUSION

Gleason scores on biopsy are a benchmark for predicting the outcome and treatment of prostate cancer. Because of differences in success rates and morbidities of various procedures for prostate cancer, counseling before therapy about the aggressiveness and extent of the disease is paramount for patients and clinicians while choosing a treatment modality for prostate cancer. Gleason grading is a key marker for prognosis and pathologists must develop consistent reporting.

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