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ORIGINAL ARTICLE

Outcome Evaluation of Active Surveillance in Low Risk Group Prostate Cancers

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ABSTRACT

Aim: To assess the outcomes of active surveillance evaluation in low risk prostate cancer patients.
Study Design: Cohort study
Place and Duration of Study: Department of Urology, Ghulam Muhammad Mahar Medical College Hospital (GMMMC), Sukkur from 1st August 2019 to 30th September 2022.
Methodology: One hundred and ten patients suffering from prostate cancer with Gleason score upto 6 (low risk group prostate cancer) patients were enrolled. Active surveillance was done with 3 monthly check-up with physical examination and serum prostate specific antigen.
Results: The mean age of the patients was 61.5±3.5 years. The Gleason score showed that majority of the cases were within the score of 6 (3+3) with highest having a clinical staging as T1c followed by T2b. The active surveillance outcomes showed on a median follow-up of 3 years that the upgrade on repetitive biopsies or prostatectomy was taken in 19 cases only with a proper treatment received in only 22 cases.
Conclusion: Patients with active surveillance have increased rate of definitive treatment post initial diagnosis. Safety net hospital provides critical care and takes up active surveillance as a challenge.
Keywords: Evaluation, Prostate, Molecular, Morbidity, Management

INTRODUCTION

Prostate cancer is the most common type of cancer found in men. It is characterized by outgrowth of prostate cells. Gleason scoring system is used on the basis of cancer cell appearance and damage comparison to healthy cells. Grade-II is described as when tumor is only found in prostate gland and have an increasing chances of cancer spreading and growth. Active surveillance (AS) of prostate cancer was opted as curative strategy back in 1990s. Active surveillance is defines as closely monitoring the patient condition without giving any sort of treatment unless biochemical results show that disease condition is getting worse.[1,2]

From last 2 decades, active surveillance is become the standard protocol for the management of very low and low risk prostate cancer. Results of cohort studies demonstrated that, likelihood of metastases also reduced many times in men however, morbidity associated with AS not get reduced. The current practice of AS includes clinical examination, testing of prostate specific antigen and prostate biopsy which is slightly invasive method that often leads to serious infection.[3-5] Moreover, these testing method lack specificity and sensitivity for the detection of high risk prostate cancer. Evidence showed by considerable number of studies highlighted that, men who were meeting with active surveillance criteria reveal high risk of prostate cancer during radical prostatectomy.[6,7]

An ideal diagnostic tool is currently unavailable for the early evaluation and prediction of prostate carcinoma in men. Advancement in molecular basis of prostate carcinoma might prove valuable in active identification of carcinoma risk among men.[8-10] Practice of active surveillance can also be improved by the utility of multi-parametric-MRI (mpMRI) of prostate gland and validated molecular tests. Various studies have highlighted that, substantial reduction in prostate carcinoma was observed by active surveillance. Although active surveillance is a better way for the disease management still modification in clinical assessment should be made according to the need of patient and current representation of prostate carcinoma.[11-13] Present study was designed for the outcome evaluation of active surveillance in prostate cancer. Result of present study will be beneficial for routinely used this management strategy for combating with deadly consequences of prostate carcinoma.

MATERIALS AND METHODS

This cohort study conducted at Department of Urology, Ghulam Muhammad Mahar Medical College Hospital (GMMMC), Sukkur from 1st August 2019 to 30th September 2022 and 110 patients suffering from prostate carcinoma and age range of 44-80 years were enrolled. The ethical approval of the study was taken before initializing the study. A written informed consent for participation in the study was taken from each participant or their attendants. The patients included in this study were not having any related terminal illness. All the patients were adults and elderly with and age >60 years. Patients with multiple carcinomas were also excluded from the study. There were 110 patients selected based on convenient sampling. Biopsy of prostate post prostectomy was conducted through transverse sections which were fixed in formalin neutral buffer, parametric magnetic resonance imaging (MRI).

The PSA analysis was conducted through ELISA by withdrawing 3cc blood. Gleason scoring and grading was performed through WHO established guidelines. The surgical margin status, Gleason 3-5 pattern percentages, intraductal carcinoma occurrence, T2 staging, invasive cribriform cancer formation were also documented. A low-risk in patients was considered with Gleason score 6 and PSA 10 ng/mL or patients with favourable intermediate-risk disease as PSA 10 to 20 ng/mL and/or Gleason score 34 with significant comorbidities and a life expectancy <10 years. Irregular outline pattern was also documented in cases where presented. All patients were clinically followed up for active surveillance outcomes every 6 month after prostectomy with monitoring of serum PSA values uptill 4 years. Histologic upgrade on repeat prostate biopsy was performed. Patients had an 8 to 14-core biopsies in a year post preliminary biopsy with targeted sites including original positive core, anterior as well as anterolateral zones. Clinical progression was determined through the unequivocal-palpable nodule development Biochemical recurrence was considered when PSA level was ≥0.2ng/ml at two individual points with a variance of 3 months. Biochemical free survival was the period between prostectomy to biochemical recurrence. Statistical analysis was performed by using IBMSPSS version 25. Analysis was carried out in terms of mean, median and ranges.

RESULTS

The mean age of the patients was 61.5±3.5 years. There were 36 median cases with a history of tobacco usage. Clinical history of comorbidities showed that patients had on average a higher frequency of multiple comorbidities with a risk of 3 or more comorbidities sin 48 cases (Table 1).

A familial history of prostate carcinoma was presented in 9 cases while biopsy core positive was observed in a range of 1-4% of the cases. The Gleason score showed that majority of the cases were within the score of 6 (3+3) with highest having a clinical staging as T1c followed by T2b (Table 2).

Table 1: History of patients suffering from prostate cancer

Demography	No.	%
Age at diagnosis (44-80 years)	61.5±3.5	
Social History		
History of Tobacco	36	32.0
History of Substance usage	20	18.0
Clinical history comorbidities		
0	10	9.0
1	30	27.0
2	22	20.0
3 or more	48	43.0
Mental Illness history	24	21.0

Table 2: Clinical characteristics of the patients suffering from prostate carcinoma

Variables	No.	%
Clinical Features		
PSA (ng/ml)	6 (range 0.8-14.2)	
Biopsy cores	12 (range 6-12)	
Biopsy cores +ve	1 (range 1-4)	
Gleason Score		
6 (3+3)	106	96.0
7 (3+4)	4	4.0
Clinical Staging		
T1c	87	79.0
T2a	13	11.0
T2b	4	3.0
T2c	2	1.0
Not known	4	3.0

Table 3: Outcome of active surveillance

Variables	Median N	Range %
Follow up period in months	29	0-186
No. of follow up PSA tests	7	1-21
No. Of follow up Biopsies	2	1-5
Upgrade on repetitive biopsies or prostatectomy	19	17
Treatment Received	22	20
Radical Prostatectomy	8	7
Radiation Therapy	13	11
Androgen deprivation therapy	2	1
Time from diagnosis to treatment (mo)	26	2-87

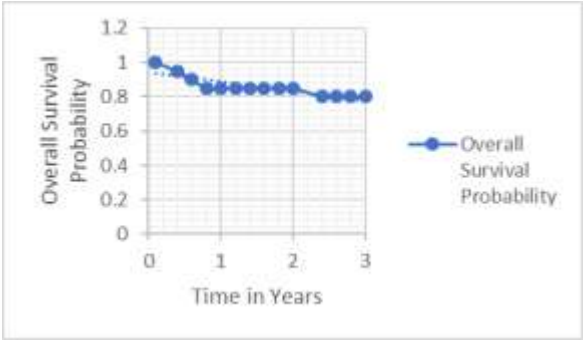

Figure 1: Kaplan-Meier survival curve (95% CI)

The active surveillance outcomes showed on a median follow-up of 3 years that the upgrade on repetitive biopsies or prostatectomy was taken in 19 cases only with a proper treatment received in only 22 cases. The radical therapy was most applied method of treatment. The total time from diagnosis up to the treatment of the patients was within a range of 2-87 with a median of 26 months (Table 3). Kaplan-Meier survival curve elaborated that within year, the overall survival probability decline (Fig. 1).

DISCUSSION

Males diagnosed with the prostate cancer can delay or postpone their treatment without increasing the metastases and mortality risk. Active surveillance proved to be a standard protocol for the management of prostate carcinoma. It involves the clinical examination of patient without the disease treatment. It was started in back 1990s for the first time in United States. Numerous programs have been initiated and reported follow-ups of 5 or greater years.[14-16] Klotz et al[17] conducted a study of AS among low risk patients and take follow-ups of PSA after every six months and biopsy during first year and then after every 3-4 years till the age of 80. Most recent data of this cohort was published in 2015 and showed that 2.8% of the patients develop metastases while 1.5% died due to prostate cancer. On the other hand, treatment given in first 10 and 15 years was 35 and 44.5% respectively.

Another extended follow up was published by Johns Hopkins active surveillance program which was started in 1995. Very low risk patients were included in that study that had PSA density <0.1 and Gleason score <6. Biopsy was done in early years and rectal examination after every 6 months. Treatment was started with increase in Gleason score >6. Results showed that, 99% of cancer specific and metastases free survival rate was observed.[5] Various other studies conducted in US also reported the similar findings.[18,19]

In university of California, prostate cancer was managed in 800+ individuals using AS protocol (PSA testing, 1 biopsy in 1 year, follow up biopsy after every 1 or 2 years). This study reported five years of survival without treatment and no death was reported in 5 years. Result of study conducted in United Kingdom revealed that, 68% of the patients remain the part of AS for 6 years and no death was reported during this time.[20] Patient include in that study was in the age bracket of 50-80years. PSA was performed after every 6 months and biopsy was performed once in a year and then after every 2 years.

CONCLUSION

Patients with active surveillance have increased rate of definitive treatment post initial diagnosis. Patient's self-compliance and follow ups are main as well as critical components of better outcomes in patients with prostate carcinoma. Safety net hospital provides critical care and takes up active surveillance as a challenge.

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