DOI: https://doi.org/10.53350/pjmhs22161206

ORIGINAL ARTICLE

Histopathological Differences Based on Method of Biopsy: Comparison Between Needle and Radical Prostatectomy

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ABSTRACT

Background: Prostate cancer is the second most common male cancer. Prostate cancer is diagnosed via a digital rectal exam, ultrasonography, and serum prostate specific antigen. Dr. Donald Gleason devised a prostate cancer grading system over 50 years ago. This system is still viable with modifications. The ISUP updated in 2005 and 2015. Gleason score and prognosis in prostatectomy stuff Gleason score, tumor volume, and tumor laterality were compared. nephroscopy and prostate

Method: The study comprised 42 men with biopsy and prostatectomy materials. Gleason's grade. The new method graded tumors. Between october2019 and October 2021, 42 individuals with prostate cancer were needle biopsy diagnosed and treated with RP. Tumor volume was measured by the number of positive blocks. A significant difference in diagnosed by digital imaging, serum prostate specific antigen, and needle biopsy. Gleason score, location, and volume are unknown tumor features.

Result: Gleason score, tumor volume, and laterality between needle biopsy and prostatectomy materials Gleason score and tumor volume enhanced concordance.

Conclusion: For a prostate cancer diagnosis, a digital exam, serum PSA and needle biopsy are quite sensitive. Lesser known tumor characteristics include Gleason score, location, and volume.

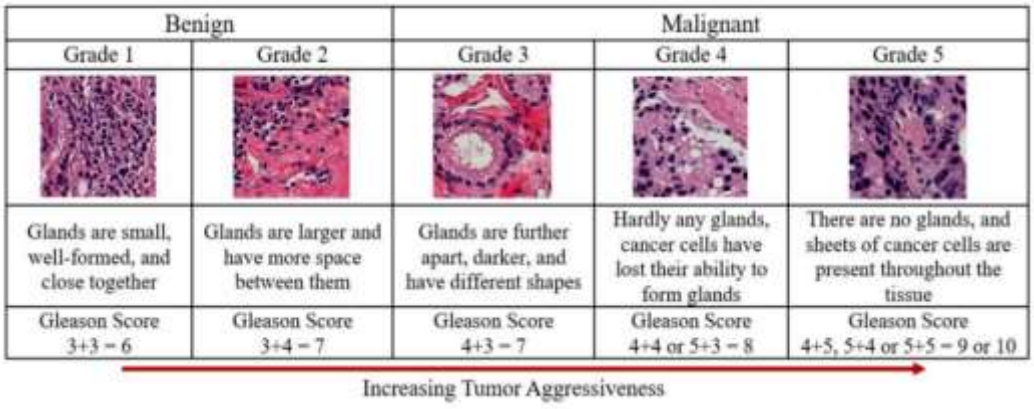
Keywords: Prostate, Adenocarcinoma, Needle biopsy, Radical prostatectomy, Gleason score

INTRODUCTION

Prostate cancer is one of the top causes of cancer death in men. Around 75% of those diagnosed are over 65, and it is rare in younger persons, including youth. Death occurs more frequently as we age. DRE, Transrectal ultrasound (TRUS), and PSA are used to test and diagnose early. TRUS directs the biopsy for prostate cancer. Prostatic epithelium secretes PSA, a protease. PSA 4ng/ml is abnormal. BPH, prostatitis, infarction, or trauma can induce this rise (such as transurethral resection, needle biopsy).High PSA and abnormal rectal exam results need TRUS-guided needle biopsy. If the sample shows adenocarcinoma, the patient has radical prostatectomy (RP). To acquire posterior peripheral zone tissues from many locations is common in prostatic adenocarcinomas (1-5).For biochemical recurrence and radiation response, needle biopsy tumor volume is critical in RP material. Many methods have been developed to assess needle biopsy tumor size. Positive cores, positive core ratios, millimetric tumor measurement in all cores, tumor ratio in each core and total specimen tumor volume.

It has been used to assess prostate cancer for about 50 years. The Gleason grading system is used to decide treatment. While Gleason scoring has evolved, its essential parts have not. The ISUP modified in 2005, and the difficulties were essentially resolved. In November 2014, Chicago addressed certain issues. Some recommended breaking down Gleason score into smaller prognostic groups. WHO's 2016 publication on urinary system and male genital organ tumors included these ideas. Needle biopsies are used to calculate Gleason scores and hence prognosis. On the other hand, prostate needle biopsy and RP materials had similar Gleason scores, tumor volume, and tumor location laterality.

Fig. 1: Biopsy Gleason grade



Received on 11-07-2021
Accepted on 21-12-2021

MATERIALS and METHOD

Between october2019 and October 2021, 42 individuals with prostate cancer were needle biopsy diagnosed and treated with RP. Tumor extensity and laterality were re-evaluated. Examining the congruence of biopsy and RP results The Gleason score was analysed utilising the 2005 and 2014 revision patterns, as well as the 2014 conference prognostic classifications. For the Gleason score, the most common and worst patterns in biopsies were added together. Added prognostic groups for each case (Grade groups 1-5).

Calculate tumor volume by multiplying tumor length by total core length. When the tumor spread into the biopsy core, the whole tissue was measured. The number of tumor-positive paraffin blocks was multiplied by the total number of specimens. They classified patients into three groups depending on tumor size. These were minor (20%), moderate (20-50%), and widespread (>50%).Cancer laterality was assessed in biopsy and RP samples.

The kappa coefficient was used in the study. Biopsy and RP had the same Kappa (κ). K is -1 to +1. Both techniques agree 100%, however κ = -1 suggests perfect disagreement. If κ is assumed to be 0, any agreement or discordance between the two techniques is due to chance.

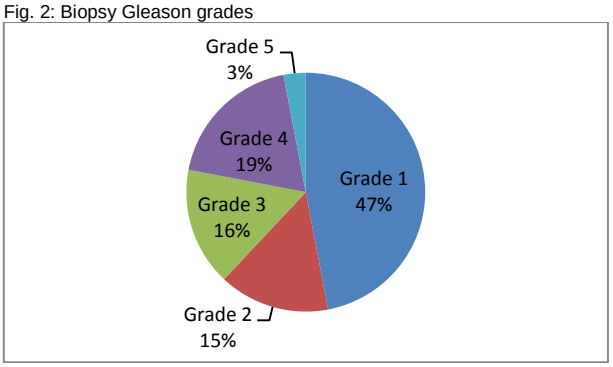
RESULTS

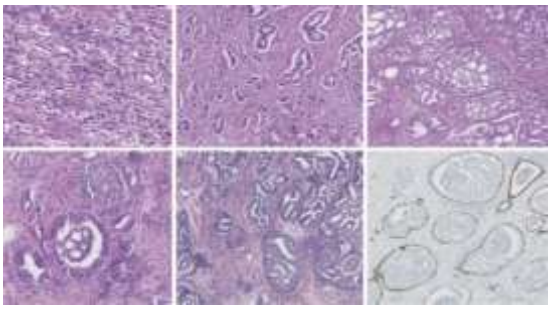
The study's 42 patients ranged in age from 45 to 80 years.Needles biopsies and RP revealed 42 cases of prostate cancer. Tumor areas in biopsies and RP materials were graded. Forty two biopsies were performed on 42 individuals, with 20 in Grade 1 (47%) and 6 in Grade 2 (15%), 7 in Grade 3 (16%), 8 in Grade 4 (19%) and 1 in Grade 5. Both techniques yielded similar results. The concordance increases with Gleason score. The needle biopsy tumor grade is usually lower than the RP tumor grade. The most common incompatibility was a smaller tumor in needle biopsy than RP. The biopsies revealed 32 bilateral and 80 unilateral cases. The 32 cases had RP, and the RP material had bilateral tumors. 80 RP materials had 18 unilateral and 62 bilateral cancers. These two techniques were 44.6% compatible. TLC Kappa was 0.14.Less than 1% concordance Prostate needle biopsy achieved 98% sensitivity, 100% positive predictive value, and 0% negative predictive value.IHC was used on 36 needle samples and 6 RPs AMACR favored tumors,

Table 1 Biopsy Gleason grade

Biopsy Gleason grade	n	%age
Grade1	20	47%
Grade2	6	15%
Grade3	7	16%
Grade4	8	19%
Grade5	1	3%
Total	42	100%

Fig. 2: Biopsy Gleason grades





DISCUSSION

The second most common cancer is prostate. It varies widely across regions and nations. The most common are in Southeastern Europe, Australia, and New Zealand. Globally, 28/100,000 men have prostate cancer, but 60/100,000 in Europe. Africa and Asia have the least incidence. Environmental and genetic factors impact the incidence disparity. It is the second most common malignancy in men in Pakistan, behind lung cancer. It is the fifth most lethal malignancy in males. Black-dominated neighbor hoods have a higher fatality rate. Asia, the Middle East, and Africa have lower mortality. Patient age and prostate cancer are linked. In men with prostate cancer, a high PSA level or an abnormal digital rectal test can be detected Hepatitis C virus (HCV) tests are not PSA may miss 25-50% of DRE-found prostate cancer. Normal palpation can misdiagnose benign conditions like BPH and inflammation as malignancy. With abnormal digital rectal examination and/or blood PSA elevation, TRUS can detect clinical prostate cancer. It has increased prostate cancer detection rates. Its utility for prostatic cancer local grading is limited because to poor tumor volume and extraprostatic extension determination. This type of RP treats localised prostate cancer. Tumor grade, volume, pathologic grade, and surgical margin conditions must be documented on RP specimens. The Donald F. Gleason approach has been used to evaluate prostate cancer for almost 50 years. Enhanced mitosis is not a distinguishing property of nuclear properties or prostate cancer, according to Donald F. Gleason's classification. Patterns 1-5 found. Between 1 and 5, the Gleason score is added. The primary pattern dominates, followed by the secondary pattern. The research gave a Gleason score to needle samples regardless of tumor size, and immunohistochemistry was used to confirm the diagnosis. On average, discovered that in 52 individuals, 25(48%) had same Gleason scores in biopsies and RP materials, whereas 19(36%) had higher values and 8(16%) had lower scores[19].

On average, 68.2% of Gleason scores did not change, whereas 32.8% changed by 1 or 2. Biopsy-derived RP grade declined 9.1% and jumped 22.7%. For low grade tumors, this was 86%; for moderate and high grade tumors, it was 77%[20]. This study found a larger proportion of similar scores on biopsy and RP, but a smaller rate of grade differences. Gleason score (3+4) and (4+3) changes in malignancies of regions 3 and 4. In this study, 28 patients (25%) had grade 2(3+4) and 28 (25%) had grade 3 (4+3).

Needle biopsies are performed to determine the Gleason score in RP and hence the prognosis in as many patients as possible. Adenocarcinomas of the prostate needle samples were evaluated for Gleason score, tumor volume, and laterality. In needle biopsies and postdiagnostic RP samples, Gleason scores are 50% incompatible[2]. Gradually, the incompatibility between Gleason scores decreases. Errors in needle biopsies or failure to determine the specific pattern may cause incompatibility. Narrow needle biopsies reveal little tumor presence despite substantial malignancies in RP materials[2-5].

One study found difficulty identifying well-differentiated and Gleason 7 tumors. The biopsy score of low grade tumors may be

lower than the genuine score in RP material, according to Tavangar et al.

Few studies have investigated the reasons and implications of incompatibility between biopsy and prostatectomy. A pathological grade or Gleason score. One way is to use a calliper to measure Tumor volume as a predictor of post-radical prostatectomy disease progression is controversial. The ISUP recommends measuring tumor volume in RP materials. Tumor volume in other organs is also monitored. We need to know the number of tumor cores and needle biopsy length since needle biopsy tumor volume is linked to biochemical recurrence and radiation response in RP material. According to the study, a few cores and microscopic sites of tumor in needle biopsy did not accurately represent the tumor volume in RP. RP shows the tumor better. A large tumor discovered in a needle biopsy is generally in RP. In RP material, the Gleason score distribution was 3 4+4 = 8 (GG4) and 1 3+4 = 7 (GG3) (GG2). Despite the small quantity, the grade may be high. The volume (length) covered by the tumor sample seems simple but is not easy to determine. Cancers that may be seen macroscopically are prostate adenocarcinomas. Needles biopsies usually leave benign areas. The ratio is derived by adding the benign areas to the tumor measures. The method used to measure tumor volume in RP materials is contested. This simple tumor measuring technique indicates the tumor volume. We used a positive paraffin block ratio to quantify tumor volume in RP.

There were 20 cases (47%) of mild tumor in RP, 15(37%) of moderate tumor, and 7(16%) of severe tumor. The biopsy-RP volume correlation was satisfactor. Larger investigations are required to assess the prognostic and diagnostic value of laterality in prostate cancer. Because a tumor in both lobes raises the stage from pT2b to pT2c, laterality is vital. Digital examination, serum PSA, and needle biopsy are extremely sensitive for PC diagnosis. The use of RP for adenocarcinoma in needle biopsy is new. Gleason score and tumor volume increase the rate of reflection of Gleason score and laterality in RP material. It helps oncologists decide on patient follow-up, treatment, and prognosis. As more cores and bigger samples are collected, serial slices and immunohistochemistry studies will certainly enhance concordance rates.

CONCLUSION

The combination of a digital examination, a serum prostate specific antigen value, and a needle biopsy is extremely sensitive for diagnosing prostate cancer in men. Treatment and prognosis of cancer patients are influenced by the Gleason score, the location of the tumors and the volume of the tumors.

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