

A Study of Psychological Interventions for Patients Treated for Prostate Cancer in Multiparametric Magnetic Resonance Imaging-Ultrasound Targeted Puncture Biopsy

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Abstract: Objective: To investigate the psychological impact on patients treated for prostate cancer in multiparametric MRI-ultrasound targeted puncture biopsy and to give relevant interventions. METHODS: To retrospectively investigate the content of patients received after radical prostate cancer surgery and perioperative period in the First Hospital of Qiqihar Medical University from January 2018 to October 2021, all of whom underwent TRUS conventional 12-needle method systematic puncture biopsy and mp MRI-ultrasound targeted puncture biopsy after mp MRI scan. Complete survival data and general information were obtained through follow-up, and the patients were assessed on the Hospital Anxiety and Depression Scale psychological status. RESULTS: Statistics showed statistically significant differences in mean scores between the $IT < 4$ weeks group and the $IT \geq 4$ weeks group in the anxiety scale ($P < 0.001$) and no statistically significant differences in mean scores between the two groups in the depression scale ($P > 0.05$, Table 1). Conclusion: Surgical time interval may not affect the efficacy of radical prostate cancer treatment and the ease of surgery, while the prolongation of the interval has a significant impact on patients' psychological status. Therefore, arranging multidisciplinary oncology discussion including psychological medicine department for oncology patients after diagnosis and formulating individualized comprehensive treatment plans with reasonable time intervals may provide a double guarantee for patients' survival time and quality of life. In order to reduce patients' psychological pain, the interval between surgeries for prostate cancer patients should be shortened as much as possible to reduce patients' psychological adverse reactions while effectively controlling tumors.

1. Introduction

Prostate cancer is the most common tumor of the male reproductive system. There are no obvious symptoms in the early stage, and most prostate cancer patients are already in the advanced stage of the disease when they are diagnosed, and metastasis of the tumor has already occurred at the time of diagnosis, missing the best opportunity for surgical treatment. Therefore, the prediagnosis and treatment method for prostate cancer is a popular topic of current research. The initial diagnosis of early prostate cancer includes digital rectal examination (DRE), prostate specific antigen (PSA), PSA doubling time (PSADT), prostate tissue biopsy, life expectancy assessment and screening for risk mutations [1]. The study also includes the assessment of life expectancy and screening for high-risk mutations. PSA testing and rectal examination are two mandatory items in the process of early diagnosis of prostate cancer. The early detection of prostate cancer is mainly through digital rectal examination (DRE) and serum prostate-specific antigen (PSA) testing. The use of multi-parametric magnetic resonance imaging and ultrasound to find suspicious lesions is followed by prostate puncture biopsy. The patient's psychological stress is high during the procedure. Without effective guidance and intervention, there is a high risk that the patient will experience significant psychological changes, resulting in psychological problems such as low self-esteem, depression, and anxiety, and later causing a series of adverse reactions such as erectile dysfunction, which can affect

the patient's quality of life.

2. Multiparametric Magnetic Resonance Imaging - Ultrasound Targeted Puncture Biopsy

The diagnosis and treatment of prostate malignant tumor using PSA is low in sensitivity and specificity, and ultrasound-assisted prostate puncture biopsy is an important basis for definite diagnosis of prostate malignant tumor [2]. Biopsy is an invasive procedure, prone to bleeding, infection, and risks such as pipeline metastasis, which not only bring great pain to the patient, but also bring severe financial burden to the patient. In contrast, magnetic resonance imaging (MRI) has a relatively high sensitivity, higher specificity, and higher detection rate. The utilization of MRI technology has made a huge impact in the process of definitively diagnosing prostate cancer [3]. Moreover, because MRI imaging is less invasive due to its structure and principle, it is radiation-free and can achieve precise location and clearly display the lesion site. Therefore, MRI is currently the ideal imaging method for prostate cancer, which not only reduces the discomfort and pain caused by puncture, but also provides a more reliable diagnosis and treatment basis for the clinical management plan of prostate cancer, and assists medical practitioners in providing accurate medical support for the early prevention and treatment of prostate cancer [4].

3. Impact of Prostate Cancer on the Psychological State of Patients

3.1 Anxiety and fear

Patients with prostate cancer often have a strong psychological stress reaction when they are informed of the tumor diagnosis and subsequently experience adverse emotional reactions such as anxiety and fear. The incidence of anxiety in domestic prostate cancer patients ranged from 23.0% to 47.8%. Studies on patients with newly diagnosed prostate cancer showed that patients generally have varying degrees of anxiety, with 6.4% of patients with severe anxiety and up to 41.9% of elderly postoperative prostate cancer patients with dysfunctional fear of disease. The degree of fear of disease recurrence among prostate cancer patients and spouses was at a moderate level, and the degree of fear of disease recurrence tended to diminish over time [5].

3.2 Depression

Patients with prostate cancer can experience various psychological crisis phenomena after debulking treatment, with depression being a particular problem. Depression is a risk factor for death in prostate cancer patients. The incidence of depression in prostate cancer patients ranges from 20.9% to 24.3%, while depression, anxiety and symptom burden status are more serious in prostate cancer endocrine therapy patients. The prevalence of depression in patients with endocrine therapy for prostate cancer is as high as 38.5%, and depression is also an independent risk factor affecting patients' cancer-caused fatigue status. There is a lack of optimal treatment for depression in this group of patients.

3.3 Others

The level of post-traumatic growth in prostate cancer patients is at a low level, while the level of psychological distress is at a moderate level. Patients with prostate cancer has low levels of psychological resilience, with preoperative prostate cancer patients having the highest psychological resilience scores and endocrine-treated prostate cancer patients having the lowest psychological resilience scores.

4. Patient Psychological Status Assessment

4.1 Case selection

To retrospectively explore the content of patients received after radical prostate cancer surgery and perioperative period in the First Hospital of Qiqihar Medical University from January 2018 to October

2021, complete survival data and general information were obtained through follow-up for 93 patients, aged 41 to 79 years, with a mean age of (61.33 ± 8.54) years, all of whom had completed prostate puncture biopsy pathology to confirm prostate cancer and underwent successful laparoscopic radical prostatectomy. The data included total prostate specific antigen values, Gleason score, age, TNM clinical stage, interval between puncture biopsy and laparoscopic radical prostatectomy, operative time, intraoperative bleeding, positive margin rate, postoperative urinary control rate at 3, 6 and 12 months, operative complication rate and comprehensive hospital anxiety and depression scale score.

4.2 Assessment method

Patients were routinely assessed preoperatively using the hospital anxiety and depression scale (HADS), which was divided into two parts: anxiety [HAD(a)] and depression [HAD(d)], each with 7 items and a total of 14 items. Each entry has a maximum score of 4 and a minimum score of 0. There were 4 levels. Final scores for [HAD(a)] and [HAD(d)] were calculated. Criteria were used as recommended by the original authors, with subscale scores: no performance (0-7 points), suspicious (8-10 points), and responsive (11-21 points).

4.3 Comparison of the results of psychological status assessment between the two groups of patients

The HADS quantitatively assessed the psychological status of 93 patients in both groups who underwent laparoscopic radical prostate cancer surgery while waiting for surgery after puncture, and the statistics showed that the difference in mean scores between the two groups in the IT <4 weeks group and the IT ≥4 weeks group in the anxiety scale was statistically significant (P<0.001). The difference in mean scores between the two groups in the depression scale was not statistically significant (P>0.05, Table 1).

Table 1 Comparison of HADS Scores Between Two Groups of Patients

Mental state	IT<4	IT≥4	T value	P value
Depression	9.21±5.44	11.02±4.79	-0.475	0.63
Anxiety	9.75±5.01	14.37±3.35	-4.313	<0.001

5. Discussion

In this study, the psychological state of patients waiting for surgery after laparoscopic radical prostatectomy was assessed by HADS, and the quantitative values were assigned. The group with IT ≥ 4 weeks scored higher on the anxiety scale than the group with IT < 4 weeks. The difference was statistically significant (P < 0.001), considering that the longer interval might put the patients in an anxious state. The psychological assessment scale and statistical methods used in this study can prove that patients who waited longer had more pronounced psychological anxiety during the waiting period than those who waited for a shorter period of time. However, there are still confounding factors such as social pressure not caused by the tumor, the patients' own personality and their ability to deal with negative emotions by themselves, which are the shortcomings of this study. In order to reduce the influence of these confounding factors on the experimental results, the responsible scorers would prompt and suggest patients to fill in the scale with their self-perceptions during the waiting time for surgery before they fill in the scale.

6. Conclusion

Taken together, the results of this study conclude that the time interval between surgeries may not affect the efficacy of radical prostate cancer treatment and the ease of surgery, while the prolongation of the interval has a significant impact on the psychological status of patients. Therefore, arranging a multidisciplinary oncology discussion including psychological medicine department for oncology patients after diagnosis and developing an individualized comprehensive treatment plan with reasonable time interval may provide a double guarantee for patients' survival time and quality of life.

In summary, we obtained that the time interval after prostate puncture biopsy does not serve as a factor affecting the effectiveness and difficulty of radical prostate cancer surgery assisted by laparoscopic surgery, but the prolonged interval has a facilitating effect on the patient's psychological anxiety state. On the premise of ensuring the efficacy and safety of surgery, in order to reduce patients' psychological pain, the time interval between surgeries for prostate cancer patients should be shortened as much as possible to reduce patients' psychological adverse reactions while effectively controlling the tumor.

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