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Prostate Cancer Detection Rate in Different Types of Targeted Transrectal Biopsy

Atoyev Sherzod Sharifovich

Assistant of department Urology, Nephrology and Hemodialisis, Bukhara Medical Institute

Abstract: This article analyzes the prostate cancer detection rate in different types of targeted transrectal biopsy. Early diagnosis of prostate cancer is a necessary condition for reducing mortality from this disease, since its detection at an early stage is often the only chance for cure. Currently, several options for targeted prostate biopsy have been proposed to facilitate early detection diseases.

Keywords: dopplerography, cognitive registration MRI, targeted biopsy, prostate cancer, glands, HistoScanning.

According to the World Health Organization, opinions, incidence of prostate cancer (PCa) is growing steadily all over the world, and in our country not this disease in the structure of general cancer morbidity ranks 3rd. Up to 40% of men in aged 60 to 70 years and already 70% of men are older 80 years old have prostate cancer of various stages. Currently the share of prostate cancer among all cancers men in developed countries make up about 15%. Early diagnosis of prostate cancer (PCa) is a necessary condition for reducing mortality, since its timely detection is often the only chance for cure [2]. Due to the peculiarities of the clinical course the tumor may not only have no effect for many years on the patient's well-being, but practically in no way. A critical element of the diagram process is the verification of prostate cancer with using polyfocal biopsy. From accuracy The success of this manipulation often depends on how to the correct tactics in relation to each conretiring patient. The indication for this operation is radio is an increase in PSA level above 4 ng/ml, the presence of a hypoechoic focus, determined with transrectal ultrasound examination (TRUS), as well as changes with digital rectal research, although other brands are also being actively studied indicating the likelihood of prostate cancer [5, 6]. Control of biopsy sampling is carried out under ultrasound guidance. Device, allowing tissue sampling from the subvisual areas [3].

Improving prostate biopsy techniques went hand in hand with the development of radical surgery prostate cancer. After biopsy, the number of detected tumors increased resistant cases of cancer. Currently it is offered a large number of visualization methods have been developed, allowing to identify those suspected of prostate cancer lesions during biopsy [7, 9, 10]. Detection of prostate cancer early stage allows the use of a wide range methods of curative treatment, ranging from radical prostatectomy and radiation therapy, ending with experimental ablative technologies [1, 4].

For a long time the gold standard was Stitch (sextant) biopsy of the prostate, allowing to obtain columns of fabric from six sections of the stats, three from each department (top, middle and grounds). For the first time, sextant biopsy was proposed in 1989 by Hodge. A biopsy can detect prostate cancer in 36% and 44% cases if the pathological process involves 2.5% and 5% of prostate tissue, respectively. However, it should be noted that the volume of research of tissue is negligible compared to the entire volume prostate tumor and lesions may be located between injections, so the sextant scheme is a thing of the past.

The following currently apply types of prostate biopsy:

➢ Standard schematic biopsy under ultrasound tracking (at least 10 points).

➢ Targeted biopsy with ultrasound guidance – true a targeted biopsy, during which from operator requires good knowledge of ultrasonic semiotics.

➢ Targeted fusion biopsy (cognitive) with combined ultrasound and MRI guidance, requires expensive equipment; at the same time, many Some researchers criticize its necessity, because the results of cognitive and hardware biopsy are according to some data, comparable.

➢ HistoScanning technology in TrueTargeting mode; this is the latest technical modification of ultrasonic visualization of the prostate, in which differential renting the tissue of this organ depending on the risk cancer detection. With the help of this technology there it is possible to perform ultrasound scanning prostate gland with very high accuracy, topically identifying suspicious areas.

The essence of HistoScanning technology is that density of scattered echo signal in different areas prostate is compared with an array of "reference" ultrasound and histological data of patients, supported by undergoing radical prostatectomy. At the same time, the results of this analysis are combined with a 3D model prostate gland, which is built according to data transverse, sagittal and coronal ultrasonography sections. The resulting model can be oriented in space in the way it is necessary to use investigator and/or operator. With the help of special there is a new TrueTargeting software package available possibility of performing biopsy under guidance taking into account the location of areas according to histoscan data roving, which allows you to precisely obtain the material only from the suspicious focus of interest, so thereby reducing the morbidity of performing a biopsy.

With HistoScanning it is possible to identify changes in the iron that are indistinguishable with traditional ultrasound examination in gray scale and various dopple roving modes [10]. After a biopsy, you may sometimes encounter complications that do not pose a threat to life may occur patient, such as short-term hematuria, hemospermia, blood in the stool.

In some cases, they resolve on their own within 12–48 hours. In rare cases, profuse bleeding is possible leakage from the rectum. The most serious complications are complications of infectious types – prostatitis, pyelonephritis, epididymitis [8].

GOAL OF THE WORK

Improving performance and comparing methods guidance dik when performing targeted biopsy prostate for differential diagnosis of cancer prostate gland from other pathological conditions and early detection of these processes.

RESEARCH METHODOLOGY

During the study, patients were divided into 3 groups.

Group No. 1 included patients who underwent biopsy was carried out on a BK ProFocus device with Doppler control (41% of patients, n = 61); Group No. 2 included patients who underwent biopsy with cognitive new MRI registration (32%, n = 48); to group No. 3 –patients who underwent biopsy according to the protocol TrueTargeting using HistoScanning technology (27%, n = 41). The control group included 55 patients who performed standard schematic prostate biopsy. For each group of patients, we determined the detection rate of prostate cancer was divided, the detection rate of prostate cancer in the "sec-swarm zone" PSA, as well as the incidence of complications.

The percentages were calculated using Chi-square test.

RESEARCH RESULTS

The detection rate of prostate cancer in group of patients No. 1 was put 55.7%, in group No. 2 – 62.5%, in group No. 3 –53.7%. In the control group this parameter was 34.5%; however, there is a statistically significant difference with control differed only in group No. 2 ($p < 0.05$).When studying a subpopulation of patients with PSA levels from 4 to 10 ng/ml, the detection rate of prostate cancer was 42.9% in group No. 1, 43.3% in group No. 2, 69% in group No. 3; in the control group – 30.8%; statistically significant May difference with the control was noted in group No. 3 ($p < 0.05$). Serious

complications in these patients was not observed. Total frequency of hemorrhagic phenomena such as rectororrhagia, hematuria and hemospermia was lowest in group No. 1 ($p < 0.05$),patients whose biopsy was performed on the device BK ProFocus with Doppler control.

CONCLUSION

Cognitive registration of MRI allows increasing determine the detection of prostate cancer by biopsy; at PSA level in the "gray zone", the methodology takes on special importance HistoScanning with auxiliary mode TrueTargeting. According to the data presented, effective use of Doppler methods in prostate biopsy does not reliably affect the detection cancer, but reduces the risk of hemorrhagic no complications. Early diagnosis makes it possible to detect treat localized forms of prostate cancer and test radical treatment.

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