



Optimization of diagnostics of prostate tuberculosis

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ABSTRACT

Results of treatment of tuberculosis (TB) depend on the promptness with which a diagnosis is made. We examined 151 patients for the purpose of studying the opportunities of modern ultrasonography (US) in diagnostics of prostate tuberculosis (PTB). We assessed hemodynamics and vascularization of prostate (P) in all patients by means of color-flow duplex scanning. Informational value of prostate biopsy in diagnostics of prostate tuberculosis were obtained in 26 patients. Acute depression of peak, diastolic, average linear volume rates of blood flow, decrease of density of vascular plexus both in central and in peripheric gland zones were revealed at PTB. Among 12 patients with already determined PTB the signs of specific inflammation are revealed in one patient to whom was performed biopsy within the first month of treatment. Also one patient had PTB among the other 14 patients.

PTB definition at early stage is complicated due to absence of pathognomonic symptoms and low degree of bacterioexcretion. US and P biopsy allows improving early diagnostics.

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Introduction

The structure of a case rate of extrapulmonary forms of tuberculosis (TB) changes depending on the period of time and the region [1–6]. Non-optimal empirical therapy concerning infectious and inflammatory diseases of genitourinary system leads to untimely diagnostics of urogenital tuberculosis, at a stage of irreversible complications [7–9]. Prostate tuberculosis (PTB) was always considered as the disease very difficult for early diagnostics owing to lack of characteristic clinical and laboratory implications [10], and also low detection rate of micobacterium of tuberculosis (MBT) in a secret of prostate and/or ejaculate, however, according to autopsies, as a rule, tubercular lesion of prostate occurs at 77% of patients with common forms of pulmonary tuberculosis and, therefore, this form of tuberculosis which isn't diagnosed in-life can't be called infrequent [11].

Results of treatment of TB patients closely depend on in-time diagnostics. At the same time definition of tuberculosis of genitourinary system, and especially prostate tuberculosis, at an early stage is very complicated owing to lack of pathognomonic symptoms and low level of bacterioexcretion.

Diagnostics is carried out by the same principles, as at tuberculosis of urinary system. Palpation of prostate and a research of its secret keep paramount value in diagnostics of chronic prosta-

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titis of any etiology, including tubercular, but the sequence of performance of diagnostic receptions is essentially important. Performance of digital rectal examination with massage of prostate on primary reception leads to urine contamination by gland secret, and the doctor won't be able objectively to estimate a condition of kidneys. Therefore it is necessary to begin examination with 3 glass urine test, and the stream of urine shouldn't be interrupted, then carry out a rectal research with secretion extraction; if it isn't received, it is necessary to make urinalysis after prostate massage. The analysis of ejaculate (according to indications), bacteriological researches, including MBT, nephrosonography and transrectal ultrasonography (TRUS) finish the primary complex of patient examination [12, 13].

Aim of the Research

The study of possibilities of modern US in PTB diagnostics.

Materials and Methods

There were 151 patients under our observation hospitalized in extrapulmonary unit of TB dispensary for the purpose of differential diagnostics and 12 healthy volunteers whose examination was necessary for definition of normal doplergram in specific conditions [3, 4].

PTB was established in 61 patients at a later stage; 74 patients had chronic nonspecific prostatitis, and 16 patients had benign prostatic hypertrophy (BPH). All patients underwent standard complex examination including provocative tuberculin test with repeated test of ejaculate. Also all patient were performed transabdominal and transrectal US, hemodynamics and prostate vascularization by means of color duplex scanning with determination of average diameter of vessels, the density of vascular plexus (DVP) in the central and peripheric areas of prostate, definition of peak, average and diastolic rates of blood flow was estimated.

We analyzed results of this method in 26 patients aged from 36 up to 72 years for the purpose of estimation informational content of transrectal puncture biopsy of prostate in PTB diagnostics. The prostate biopsy was carried out by a 6–12 points standard technique with usage of ultrasonic HAWK 2102 scanner and the Pro-Mag biopsy gun. By the time of PTB biopsy PTB has been already established in 12 patients within the terms from 1 month to 3 years, the diagnosis was verified bacteriologically and/or radiologically. 14 people underwent this examination for the first time.

Results and Discussion

Normal sizes of gland (93.4%) are registered in almost all PTB patients during transrectal US. Organ borders remained clean and clear in 68.8% of patients;

though the gland borders were defined as blurring its blurring and discontinuity at every third (31.2%). In 62.3% of cases calcified focus which should be treated as a calcification of tuberculous focuses were visualized. The typical picture is presented in Figure 1.

DVP in all patients was reduced the following way: in group of patients with chronic prostatitis in the central area of prostate it was reduced on the average by 2.96 times, in the peripheric zone — on the average by 3.2 times. Decrease of DVP was revealed on the average by 3.3 times in patients with BPH in a peripheric zone though in the central area, on the contrary, there was an augmentation on the average by 1.2 times. Disturbance of blood supply was the most expressed at prostate TB patients, DVP was lower on the average by 4.1 times.

Average value of diameter of prostate vessels at chronic prostatitis was less, than in healthy men in the central area by 1.72 times, in the peripheric zone by 1.52 times. In BPH patients diameter of vessels in the central area was 1.5 times larger and less in the peripheric zone by 1.8 times. Decrease of average value of diameter of vessels by 2.2 times both in central, and in peripheric zones is registered at PTB patients.

Thus, at PTB sharper depression of peak, diastolic, average linear volume rates of blood flow, decrease of density of vascular plexus both in central, and in peripheric gland zones is revealed, unlike patients with chronic prostatitis who had less expressed changes in the central area, than in peripheric one. On the contrary, the rate of volume blood flow in the vessels passing in prostate hyperplasia zone was enlarged at BPH.

The following indicators can testify to a possible tubercular lesion of organs of reproductive system: indicators of linear peak rate of blood flow lower than 5.8 cm/s, 2.20 cm/s linear dynamic rate of blood flow, 4.00 cm/s linear average rate of blood flow, pulsation index higher than 1.60 c.u., index of resistance higher than 0.8 c.u., 0.009 l/min volume rate of blood flow, densities of vascular plexus lower than 0.5 vessels/cm.

The received results are allowed to consider the prostate US added with dopler sonography as a screening method to PTB tuberculosis.

Now the prostate biopsy has got widespread use. This method of a research is proposed for clinical use at infiltrative prostate tuberculosis; it confirms the diagnosis in case of detection of specific pathomorphologic symptoms or an active paraspecific inflammation granting other data confirming tuberculosis. The biopsy of prostate is contraindicative at cavernous prostate tuberculosis as it can be the reason of "traveling infection". It follows that urethrography has to be originally performed for an exception of prostate cavitation.

Among patients with already determined prostate tuberculosis (12 people) the signs of specific inflammation are revealed only in one patient whom was



Figure 1. Transrectal prostate US; the multiple centers of calcifications are visible

performed biopsy within the first month of treatment. The pathomorphologic pattern is presented in Figure 2.

It is appropriate as TB therapy the tubercular inflammation quickly loses specificity it is under the influence of multicomponent. Prostate cancer as the disease accompanying PTB was revealed in this group in 1 patient (8.3%) with the three-year disease anamnesis. Signs of nonspecific inflammation are registered in 7 patients (58.3%), including planocellular metaplasia of epithelium in 2 patients (16.7%), with fibrosis phenomena in 2 patients (16.7%), with focal atrophy patients in 2 patients (16.7%). Existence of the amyloid centers is revealed also in 2 patients (16.7%), glandular and fibrous hyperplasia in 1 patient (8.3%).

Prostate TB was revealed in one patient among 14 of 26 patients. The most frequent histological finding was fibromuscular hyperplasia in 10 patients (71.4%), including focal and scattered leukocytic infiltration in 4 patients (21.4%). Prevalence of fibrosis and sclerosis took was registered in 2 people (14.3%). The prostate cancer is diagnosed in 1 patient (7.1%).

Thus, sensitivity of method is low according to preliminary estimation. First of all, it is connected with late terms of performance of biopsy. The transrectal biopsy of prostate for the purpose of differential diagnostics of tuberculosis is proposed right after suspected case and before performing long-term antibacterial therapy, especially by fluoroquinolones. Bacteriological, molecular and genetic research of biopsates can also promote rising of method sensitization.

Conclusion

Early diagnostics of prostate TB remains major problem. Extremely important in examination of

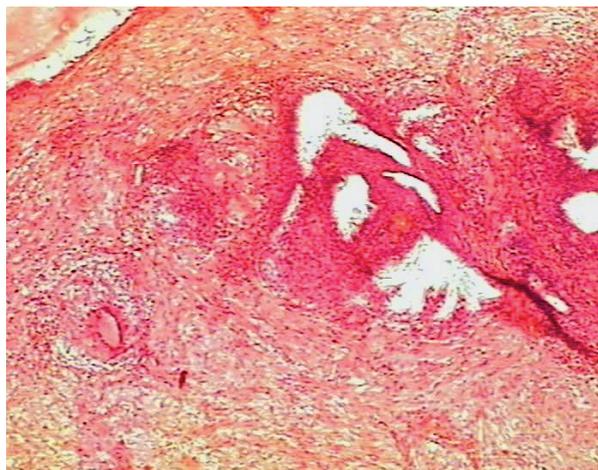


Figure 2. Prostate tuberculosis. The huge multinuclear cell (at the left) is surrounded with lymphocytic infiltration. An increase of 100. Coloring by hema-toxylin and eosine

patients with chronic prostatitis is to maintain an algorithm: three-glass test at continuous emission is carried out before a rectal research; then bacteriological research of exprimate samples of gonads for flora and MBT should be performed. Prostate US and its biopsy with pathomorphologic and bacteriological research of biopstate. Persistently developing chronic prostatitis is the indication for retrograde urethrography.

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