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X-RAY AND ECHO GRAPHIC DIAGNOSIS OF NEPHROTUBERCULOSIS

This article is about ultrasonic investigation of nephrotuberculosis

Introduction: In the structure of extra pulmonary tuberculosis nephrotuberculosis occupies the leading place. Despite the achievements of modern medicine about 80% of nephrotuberculosis cases are diagnosed at the late and advanced stages (Nersesjan A.A. et al., 2010). Specificity and reliability of this or that method of roentgenological diagnostics of nephrotuberculosis depends on localisation, character and expressiveness of destructive process. Characteristic for nephrotuberculosis signs are observed, as a rule, at its far advanced forms and are presented by cavernous formations and adverse variants of calcification (Nersesjan A.A. et al., 2007; Benchekroun A. et al., 1998). The literature data about ultrasonographic investigation of kidneys at various forms of nephrotuberculosis are inconsistent. The ultrasonographic semiotics of nephrotuberculosis has not been still defined, the ultrasonographic differential-diagnostic signs of renal lesions have not been also developed (Rakhmatullin R.R. et al., 2007).

Material and methods: The data of the standard roentgenological investigation including excretory urography and ultrasonography have been analyzed in 344 patients with nephrotuberculosis. Results of research are verified on the basis of clinical, laboratory, roentgenological, radionuclide and pathomorphological findings. Renal ultrasonography was performed on the device "Interscan-250" (Germany) working in real time with use of linear and sectoral gauges of frequency 3,5-5,0 mHz.
Results and discussion: Various forms of nephrotuberculosis on the ultrasonograms were characterized by focal and organ signs of different expressiveness and depended, first of all, on depth of the pathomorphological changes. According to our findings increase in the sizes of a kidney at various forms of nephrotuberculosis was found in 41.8% of cases, diminished sizes of kidney due to its fibrous changes was noted 2 times less often (19.5%). In 75.9% of cases of nephrotuberculosis there were kidney rough outlines connected with destructive changes of kidney parenchyma. The affections of the caliceal-pelvic complex were revealed rather often in the patients with nephrotuberculosis including deformation of caliceal-pelvic system at 79.1%; consolidation - at 67.2%; and sclerosis - at 63.1%. The renal parenchyma echogeny was also investigated in various forms of nephrotuberculosis according to the criteria developed for patients with chronic kidney failure (Olhovskaja E.B., 1999). According to our observations in different forms of nephrotuberculosis the increase in kidney parenchyma echogeneity stage I (41.6%) and II (22.1%) was occurred more often. At various forms of nephrotuberculosis “periphicates” in the kidney parenchyma were found in 50.3% of cases. Among surveyed patients with nephrotuberculosis at half there were revealed cavitary formations of various character in kidney parenchyma (cavern). One cavitary formation was observed in 70 (39.8%) patients, more than one cavitary formations - in 106 (60.2%) patients with nephrotuberculosis. The renal caverns with purulent contents or cleared in a kind of hypo-and unechogenous cavitary formations in the kidney parenchyma were revealed in the majority of patients (64.2%). The caverns with fibrous calcification as hyperachogenous formations in the kidney parenchyma were met 2.6 times less often (23.9%), than caverns with hypo-and unechogenous formations. The walls of caverns were condensed in 110 (62.5%) and thickened - in 96 (54.5%) patients. The fibrous changes and deformations may be seen frequently around cavitary formations (65.9%). The cavities of destruction are presented mostly often with rough contours (85.8%) and irregular form (63.6%).

The comparative analysis of ultrasonographic and roentgenological investigation in 344 patients with nephrotuberculosis showed distinctions in diagnostic value of these methods. Accurate ultrasonographic findings of nephrotuberculosis were recorded in 76.2% of patients, radiological - in 51.2% (tab.1).

Comparative characteristics of the rentgenological methods of investigations during study of structure changes in the kidneys of the patients with different forms of nephrotuberculosis
Table 1

<table>
<thead>
<tr>
<th>Technique</th>
<th>Patients number</th>
<th>Disease signs clear</th>
<th>doubtful</th>
<th>absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kidney ultrasonography</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1. Limited forms of NT</td>
<td>344</td>
<td>26 (75.9±2.3)</td>
<td>38 (11.0±1.6)</td>
<td>45 (31.1±1.8)</td>
</tr>
<tr>
<td>1.2. Diffusive forms of NT</td>
<td>70</td>
<td>32 (45.7±5.9)</td>
<td>16 (22.9±5.0)</td>
<td>22 (31.4±5.5)</td>
</tr>
<tr>
<td>2. Excretory urography</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1. Limited form of NT</td>
<td>344</td>
<td>176 (51.2±2.6)</td>
<td>77 (22.4±2.2)</td>
<td>91 (26.4±2.3)</td>
</tr>
<tr>
<td>2.2. Diffusive forms of NT</td>
<td>70</td>
<td>53 (75.7±5.1)</td>
<td>12 (17.2±4.5)</td>
<td>5 (7.1±3.0)</td>
</tr>
</tbody>
</table>

At the limited forms of nephrotuberculosis the accurate ultrasonographic signs were defined more rare (45.7%) than roentgenological parameters – 75.7%; and in cases of disseminated forms of nephrotuberculosis, on the contrary < ultrasonographic accurate signs of nephrotuberculosis were revealed more often (83.6%), than roentgenological data (44.9%). This was confirmed by data about characteristics of roentgenological methods of investigation in different forms of nephrotuberculosis. In renal tuberculous papillitis the clear ultrasonographic findings of disease were met 1.7 times more rare than roentgenological (45.7% vs. 75.7%, respectively, P<0.01); and in patients with cavernous form of nephrotuberculosis the clear ultrasonographic signs of nephrotuberculosis were found more often (78.7%) than roentgenological ones (47.5%; P<0.01). In polycavernous and fibrous-cavernous forms of nephrotuberculosis the good ultrasonographic signs were revealed almost in all Patients (90.7%), and clear roentgenological signs – only in 1/3 patients (P<0.01). Intuberculous nephrocirrhosis the accurate ultrasonographic findings were found frequently (90.5%) too. And, on the contrary, in this group of patients because of unfunctioning kidney and specific process distribution roentgenological accurate signs of disease were revealed in 14.3% of cases. Similarly, in tuberculous pyonephrosis the clear ultrasonographic sign of disease were met in 83.3% of cases. The roentgenological clear signs of nephrotuberculosis were not found in the patients of these groups. This may be explained by absence of kidney parenchyma, significant morphological changes of a kidney. Our analysis performed in the patients with solitary tuberculous kidney showed absence of statistical differences in frequency of accurate ultrasonographic and roentgenological signs of disease. In tuberculosis of solitary kidney the limited forms of nephrotuberculosis and fibrous changes in kidney parenchyma and caliceal-pelvic system are frequently met. In the patients with post-tuberculous hydronephrosis the clear ultrasonographic findings of disease were established in 94.8 % of cases, and roentgenological accurate signs were met only in half of cases. Thus, the accurate signs of nephrotuberculosis were established on the sonograms of kidneys in 261 (75.9
%) patients, on the excretory urograms in 176 ones (51,2 %). The ultrasonography of kidney in nephrotuberculosis provides with obtaining of the additional information about character and prevalence of specific process in kidneys. Value of this method consists in possibility of its multivariant use not only doe diagnosis, but also for the control in the course of treatment and the postoperative period. It is most important that ultrasonic investigation of kidneys in nephrotuberculosis may be used in reduced functional kidney capacity when roentgenocontrast methods of investigation are uninformative, and also at intolerance of roentgenocontrast substances by patients and pregnant women.

Conclusions: The ultrasonographic findings of nephrotuberculosis have direct correlation with the intensity of pathomorphological changes. There were revealed primary and secondary ultrasonographic signs in nephrotuberculosis. The primary signs are characterized for tuberculosis (“pertiphicates” in the parenchyma; cavitary formations in the parenchyma of irregular form with thicken, condensed walls and rough outlines), secondary signs were related to the changes around the specific focus (kidney size change, deformation, sclerosis, consolidation and caliceal-pelvic system dilatation; increase and/or decrease of echogenicity of the kidney parenchyma. Comparative analysis of the roentgenological methods of investigations of nephrotuberculosis shows that clear signs of disease were establisshed in kidney ultrasonography in 76,2% of cases; and in excretory urography – in 51,2% of cases. In advanced destructive forms of nephrotuberculosis the clear ultrasonographic signs are revealed more often (86,8%) than roentgenological – 51,2%. The ultrasonography of the kidneys seems to be high informative method of nephrotuberculosis identification, the method sensitivity is 78,5%, specificity – 89,7%.

REFERENCES


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SIGNIFICATION OF RENAL INVOLVE IN PATIENTS WITH DRUG-RESISTANT PULMONARY TUBERCULOSIS

This article is about early diagnosis of renal pathology in patients with drug-resistant pulmonary tuberculosis.

Increasing prevalence of the drug-resistant types of tuberculosis (TB) all over the world set to look at a renal examination newly (A.E.Polyakov et.al.) One of the problems in current phthisiology is to increase efficacy of treatment in patients with drug-resistant pulmonary tuberculosis with concomitant renal pathology. Cumulative current data evidence of high prevalence of renal diseases in patients with pulmonary tuberculosis (N.M.Starova, 1986; M.A.Efremovtseva et.al., 2003). A review of the literature and our own experience show that a prognosis in patients with drug-resistant pulmonary tuberculosis with concomitant renal pathology is unfavourable and capabilities of chemotherapy are limited (M.V.Titukhina et.al., 2010; W.Wada, 1997). It is for this reason an issue of the day is the problem of concurrent diagnosis of renal diseases in patients with pulmonary tuberculosis, who have drug-resistance. The purpose of this presentation is to study the renal state in drug-resistant patients with pulmonary tuberculosis.

Patients and methods: A total of 263 patients with pulmonary tuberculosis were subjected to a complete examination. Among them the drug-resistant and drug-susceptible forms of pulmonary tuberculosis have been revealed in 163 and 100 patients, correspondingly. The age range of patients with drug-resistant form of pulmonary tuberculosis was 18 to 67. One hundred and seven (65,6% \pm 3,7%) were males and 56 (34,4\pm 3.7) were females. In 114 (69,9\pm 3.5%) fibrocavernous, in 37 (22,7\pm 3,2%) infiltrative and in 12 (7,4\pm 2,0%) disseminated pulmonary tuberculosis was diagnosed.