SECTION I. BIOLOGY

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Integrated evaluation of the upper urinary tracts drainage-methods efficiency by the actual indicators complex

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Abstract

The article is devoted to the problem of upper urinary tracts obstruction treatment. It presents the data of an original study to justify the choice of the method of drainage of the upper urinary tract among the comparison base (internal stenting of the ureter, catheterization of the ureter, percutaneous puncture nephrostomy) in a specific clinical situation based on the determination of integral indicators of effectiveness.

Key words: upper urinary tracts, obstruction, drainage, internal ureteral stenting, ureteral catheterization, percutaneous puncture nephrostomy, efficiency, integral evaluation.

Аннотация

Статья посвящена проблеме лечения обструкции верхних мочевыводящих путей. В тексте статьи представлены данные оригинального исследования по обоснованию выбора способа дренирования верхних мочевыводящих путей в пределах базы сравнения (внутреннее стентирование мочеточника, катетеризация мочеточника, чрескожная пункционная нефростомия) в конкретной клинической ситуации. Обоснование выбора представилось возможным на основе определения интегральных показателей эффективности.

Ключевые слова: верхние мочевые пути, обструкция, дренирование, внутреннее стентирование мочеточника, катетеризация мочеточника, чрескожная пункционная нефростомия, эффективность, интегральная оценка.

Actuality. The status of obstruction of the upper urinary tract is the most important problem of modern clinical urology, because has a significant level of occurrence in the population and serious medical and social consequences (azotemia, kidney block, accession of infectious and inflammatory complications, pain syndrome, outcome in renal failure) [1-2]. Urolithiasis, oncological urological and gynecological oncological diseases together constitute a significant sector in the structure of general somatic morbidity, while acute and chronic obstruction is their most typical complication [1]. Modern methods of drainage of the upper urinary tract (UT) (internal ureteral stenting, placement of a ureteral catheter, percutaneous puncture nephrostomy) largely compensate for this problem, but it still has major unresolved aspects. As before, the question of choosing the option for drainage of the upper urinary tract remains relevant, since each of them has its own advantages and disadvantages [3-4], and the «ideal» method does not yet exist [1-4]. The optimal approach in this case is the use of integral evaluations of effectiveness, based on a comprehensive account of the most relevant private indicators of the effectiveness of treatment. However, to date, in the study and use of drainage of the upper urinary tract, such studies have not been practically performed. Accordingly, the presented study can be a significant step towards solving the indicated problem.

Purpose: to realize a comprehensive assessment of the effectiveness of various methods of drainage of the upper urinary tract (internal stenting of the ureter, ureteral catheterization, percutaneous puncture nephrostomy) in conditions of their obstruction according to a set of relevant indicators.

Materials. Examined 300 patients, corresponding to the patient model: «Diagnosis: urolithiasis / oncurological diseases / oncogynecological diseases, accompanied by obstruction of the upper urinary tract, age 30-80 years».

Study inclusion criteria: compliance with the patient model, upper urinary tract obstruction, confirmed by ultrasound and radiographs; informed consent of the patient for treatment. –

Study exclusion criteria: mismatch in any of the inclusion criteria.

According to the method of drainage of the upper urinary tract, the study participants were divided into 3 groups:

group 1 - ($n_1 = 100$ people) – with the use of ureteral stenting;
 group 2 - ($n_2 = 100$ people) – with the use of ureteral catheterization;
 group 3 - ($n_3 = 100$ people) – with the use of percutaneous puncture nephrostomy.

Group standardization was achieved by ensuring an identical intragroup distribution of study participants by age, gender and nosological affiliation, the nature of the course of obstruction, and the composition of treatment in addition to drainage of the upper urinary tract.

Methods. For inclusion in the integral assessment, the following particular indicators of the effectiveness of drainage of the upper urinary tract were taken into account: 1) indicators of azotemia (urea, creatinine), 2) indicators of urinary syndrome (bacteriuria, leukocyturia, erythrocyturia), 3) dilatation of the pyelocaliceal system (PCS), 4) overall clinical efficacy (required length of hospital stay, convenience for patients, technical difficulties in drainage), 5) complications (trauma, active bleeding, infectious-inflammatory). These indicators were monitored throughout the observation period (hospitalization).

For the statistical analysis of the research results, the following methods were used: assessment of the nature of the distribution of a random variable using the Shapiro-Wilk's *W*-test, assessment of the statistical significance of intergroup differences using the Student's *t*-test for unrelated samples and its adaptation for simultaneous comparison of three groups – parametric one-way variance analysis **ANOVA** (the hypothesis of equality of variances was tested using the Levene's test, a posteriori comparison of groups – using the Scheffé's test), the minimum level of statistical significance of intergroup differences is $p < 0,05$.

To solve the problem of a comparative comprehensive assessment of the effectiveness of the compared drainage methods, the method of deterministic integrated assessment was used, in which the integral indicator is obtained by the method of the sum of places according to M.I. Bakanov. and Sheremet A.D. (2001) [5]. The method assumes a preliminary ranking of all drainage methods according to informative particular indicators. Each indicator corresponds to a new parameter s_{ij} , which determines the place of each *j*-th method among others according to the *i*-th indicator. A table of points $\{s_{ij}\}$ is compiled, and on the basis of this matrix a specific value of the generalizing assessment is calculated using the formula [5]:

$$K_j = \sum_{i=1}^n a_{ij} s_{ij}; \quad j = 1, \dots, m.$$

Statistical processing of the obtained data was carried out in an automated mode using an Asus personal computer based on an Intel (R) Core (TM) 2 Quad CPU Q 9550 @ 2.83 GHz 2.00 GB RAM operating system Microsoft Windows® XP Professional Service Pack 3 version 5.1. and standard software packages MS Excel XP and StatSoft Statistica 6.0.

The main results. After the study, it was found that the *ratings of the integral indicators* of the compared UUT-drainage-methods, calculated by the method [5], have the following form:

- by the correction of azotemia: «nephrostomy > stenting > catheterization»;
- by the correction of urinary syndrome: «catheterization > stenting = nephrostomy»;
- by the correction of PCS-dilatation: «nephrostomy > stenting > catheterization»;
- by the general clinical effectiveness: «stenting = nephrostomy > catheterization»;
- in terms of overall effectiveness: «nephrostomy > stenting > catheterization».

Conclusion. Based on the results obtained, it should be concluded that the effectiveness of the compared methods of drainage of the upper urinary tract (internal stenting of the ureter, catheterization of the ureter, percutaneous puncture nephrostomy) in most cases has a difference both in particular and in complex indicators. Nevertheless, when choosing specific drainage methods, it is necessary to move from taking into account their individual advantages and disadvantages to developing a unified selection system. In the process of choosing a method as backbone factors, one should focus on the actual indicators of a specific clinical situation that are important for drainage. To increase the efficiency of the choice of the method of drainage of the upper urinary tract, its integral assessment is necessary, which is proved by the example of the results of this study. The results obtained should be taken into account in urological practice.

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Anti-rituximab antibodies in refractory / relapsing cases of chronic lymphocytic leukemia

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Abstract

Rituximab, a chimeric monoclonal antibody targeted against the pan-B-cell marker CD20, is widely used for treatment of lymphomas, rheumatologic diseases and other