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Long-Term Results after Prostate Artery Embolization in Patients with Benign Prostatic Hyperplasia

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Abstract: Benign prostatic hyperplasia of the prostate gland is a disease caused by the growth of adenomatous tissue in the transition zone of the prostate gland, which is mainly seen in older men. The consequence of BPH is the occurrence of intravesicular obstruction. This study is based on the analysis of the examination and treatment data of 9 patients with BPH treated at the Bukhara Regional Multidisciplinary Medical Center (BRMMC) Bukhara branch of the Republican Specialized Scientific and Practical Medical Center of Urology. Treatment with the PAE method was carried out in 2018-2020 on the basis of the X-ray endovascular department of BRMMC. For long-term outcomes, the study period was 36 months after performing PAE. In the postoperative period, all patients received tamsulosin 0.4 mg, 1 capsule 1 time per day for 1 month. In the early postoperative period, postembolization syndrome was observed, manifested as pain in the perineum, anus, lower part of the vagina, urge to urinate, and pain along the urinary tract. In the postoperative period, diclofenac sodium suppositories were prescribed at a dose of 75 mg rectal at bedtime for 5 days once a day to prevent and relieve pain. The pain syndrome was mild and average up to 3 points.

Keywords: BPH, embolization, prostate gland, azotemia.

Relevance. Benign prostatic hyperplasia (BPH) is a disease caused by the growth of adenomatous tissue in the transient zone of the prostate gland and which manifests itself in men mainly of elderly and senile age [2]. The consequence of BPH is the occurrence of infravesical obstruction. In the decompensation stage, the disease leads to a number of serious complications, including the inability to urinate independently, which requires the installation of a cystostomy for constant urine drainage. In the last decade, a number of alternative surgical interventions have appeared to overcome the existing problems [1,3]. At the same time, none of the methods is universal, they often require high-tech equipment.

One of the methods of treatment of BPH, which is radically different in its approach to solving the problem, is the method of embolization of the prostate arteries (PAE). This technique is aimed at blocking the arterial supply of the hyperplasia node and, as a result, its further reduction. The STAGE allows performing interventions without using the methods of an anesthetic aid, which makes it possible to use it in a wider group of patients. The active development of the technique has been taking place over the past 10-15 years, and every year there are more and more publications about its effectiveness [4-6, 8-10].

The purpose of this report was to assess the functional state of the lower urinary tract and the quality of life of patients in the long-term period after PAE in the treatment of BPH.

Material and methods. The work is based on the analysis of data from the examination and treatment of 9 patients with BPH who were treated at the Bukhara branch of the Republican Specialized Scientific and Practical Medical Center of Urology at the Bukhara Regional Multidisciplinary Medical Center (BOMMC). AAP treatment was performed on the basis of the X-ray endovascular department of the BOMMC in the period 2018-2020. The study period for long-term results was 36 months after the PAE was performed. To assess the functional state of the lower urinary tract and the quality of life of patients, a standard urological examination was performed, including an IPSS and QoL questionnaire, transrectal ultrasound (TRUS), residual urine volume, urine flow rate, PSA level both before treatment and after 36 months.

Prior to treatment, all patients had concomitant pathology in which the risk of open adenomectomy increased many times (diabetes mellitus, coronary heart disease, cardiovascular insufficiency of varying degrees). The degree of anesthetic risk was according to ASA - III, IV. The age of the patients ranged from 60 to 69 years.

Endovascular intervention was performed on an ALLURA CENTRON angiography unit (Philips, the Netherlands). Merit Vedic microspheres (USA), 300-500 microns in size, were used as an embolization material. Embolization was performed until the "stop contrast" effect was achieved in the proximal sections of the prostatic artery, the absence of contrast in the distal segments of the artery, as well as the presence of reflux into the parietal branches during control contrast of the prostatic arteries..

Exclusion criteria for patients who were scheduled for PAE:

- Signs of azotemia (increased levels of urea and creatinine in the blood);
- Pronounced average proportion;
- Prostate sclerosis as an outcome of chronic calculous prostatitis.

Statistical data processing was performed using computer programs Statistica 6.0, Excel 2007.

Research result: In the postoperative period, all patients took tamsulosin 4 mg 1 capsule 1 time a day for 1 month. In the early postoperative period, postembolization syndrome was observed, which manifested itself as pain in the perineum, anus, lower abdomen, frequent urge to urinate, and cuts along the urethra. To prevent and alleviate its degree in the postoperative period, candles with diclofenac sodium at a dose of 75 mg per rectum were prescribed once a day before bedtime for 5 days. Pain was assessed on a 10-point scale. The pain syndrome was mild and averaged up to 3 points.

There were no significant complications in the early postoperative period. In the literature, cases of ischemia of the rectal mucosa, ischemia of the mucous wall of the bladder, ischemia of the mucous membrane of the glans penis, deterioration of erectile function were not recorded in our observations [7]. Only in one observation after 1 month, according to the control examination of the prostate and bladder, a "plus tissue" was detected in the lumen of the bladder, located parietally in the area of the bottom of the bladder. This complication was assessed as ischemia of the bladder mucosa. This formation was detached during cystoscopy with manipulative forceps in order to prevent stone formation. After cystoscopy, the patient noted his discharge during urination.

The dynamics of urination, prostate size, and other indicators after PAE are presented in Table 1.

Table 1. Results of treatment of patients with BPH by the PAE method (M±m)

Indicator	Till PAE, n=9	After 6 months, n=9	After 12 months, n=9	After 36 months., n=9
The volume of the Prostate gland(sm3)	53,6±8,3	28,6±6,4*	26,4±6,2*	26,6±6,4*
Residual urine volume (ml)	55,9±5,3	20,4±1,7*	21,1±2,2*	25,4±1,6*
Urine flow rate (ml/s)	9,2±0,3	14,9±0,4**	15,8±0,6**	15,3±0,6**
IPSS (points)	28,2±0,7	13,7±0,8**	9,7±0,7**	10,8±0,7**
QoL (points)	4,8±0,2	2,6±0,1*	2,4±0,2*	2,6±0,3*
PSA total (ng/ml)	5,9±1,1	3,1±0,3*	2,9±0,2*	3,2±0,2*

Note: * - P<0.05 ; **- P<0.001 - statistical significance of the difference from the values before the use of PAE.

In the examined patients, by 6 months, the volume of the prostate gland decreased by 53.3% from the initial one, the volume of residual urine decreased by 36.5% from the initial level. There was also a positive dynamics of the urine flow rate for 6 months and the associated IPSS and QoL values decreased in a similar way, respectively.

The long-term examination 12 and 36 months after the PAE showed a stable result.

Conclusion. Long-term results of treatment with PAE showed the preservation of functional parameters and quality of life of patients. As the experience of using PAE in patients with BPH has shown, it can be used in patients with severe concomitant diseases to eliminate infravesical obstruction. This technique is an alternative to open adenomectomy, which is especially important for weakened patients with a high risk of anesthesia.

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