

Urinary Tract Infection on Double J-J Stent, about 92 Cases

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ABSTRACT

Objective: The study aimed to clarify the prevalence of urinary tract infection due to double J-J tube by describing its clinical, bacteriological, therapeutic, and evolutionary aspects in the urology department in Ibn Rochd University Hospital in Casablanca.

Patients and methods: The study followed the descriptive method, from January 01, 2019, to December 31, 2019, examining the records of patients who have had a J-J catheter inserted as a type of upper urinary tract bypass and in the meanwhile, they get a urinary tract infection.

Results: Ninety-two cases were included in our study. The average age of the patients was 48 years with ranges of 17 and 79 years. The sex ratio M/F was 1.3. Most Etiologies of the cases were dominated by urinary lithiasis by 47% of cases, followed by tumor caused cases with 37.27%. As for the main clinical signs, Lower back pain had taken the place as it was found in 31% of cases. The bacteriological isolation found Gram-Negative Bacillus as the main germ in 86% of cases with the predominance of *Escherichia coli* (*E. coli*) (44%). The main antibiotic prescribed was fluoroquinolones in 32% of cases.

Conclusion: J-J tube insertion is an effective and minimally invasive technique of bypassing the upper urinary tract to preserve kidney function but it could cause complications including urinary tract infection hence the need to respect preventive measures.

Keywords

J-J stent, Urology, Urinary tract infection.

Introduction

The insertion of the J-J stent became a frequent act in urology [1] used for the first time in 1978 by the teams of Finney and Hepperlen [2]. Since then, it has undergone several changes not only in the shape but especially in the nature of the component material, to considerably improve its effectiveness and its tolerance.

However, its simple and rapid implementation should not underestimate its risks and complications, including infection, that is frequently reported in clinics. Which makes it difficult to manage the underlying etiology and promoting the emergence of multidrug-resistant germs, hence the need for perfect control of indications and surgical technique.

The study aimed to clarify the prevalence of urinary tract infection on double J stents by describing their clinical, bacteriological, therapeutic, and evolutionary aspects in the urology department of Ibn Rochd University Hospital in Casablanca.

Materials and Methods

This method followed in this study was a retrospective study, of descriptive type spread for 1 year from January 01, 2019, to December 31, 2019, including patients who had a J-J stent inserted as a type of bypass of the upper urinary tract and with a urinary tract infection. The instructions were:

Epidemiology: Age, Sex, Socioeconomic Level

Clinical: History, Indication of JJ stent insertion, Etiological Diagnosis, Duration of Dual JJ

Paraclinical: Cytobacteriological Examination of Urine (Isolated

Germ and Antibiotic)

Therapeutics: Antibiotic Prescribed and period taken

Evolution stent Act: check urinalysis After 5 Days of Antibiotic Treatment

Results

92 patients were included in the study. The average age of the patients was 48 years with extremes of 17 and 79 years. 56% of cases were Men, The main medical history (ATCD) was high blood pressure (hypertension) in 23 of the patients(25% of the cases), followed by diabetes in 9 patients (9.7%), 5(5.4%) patients had a history of radiotherapy and/or chemotherapy (XRT and/or Chemo), 3(3.2%) cases with chronic kidney failure (CRF) and 3(3.2%), patients the had a corticosteroid therapy while the surgical treatment of urinary lithiasis was found as the main surgical history in 16 patients (17.39%), followed by a history of gynecological surgery (hysterectomy) in 7 patients (7.6%) and transurethral prostate resection (TURP) in 4 patients(4.34%) (Table 1).

Table 1: Breakdown of patients by antecedent.

	History	Number of cases	Percentage (%)
ATCD Medical	hypertension	23	25
	D iabetes	9	9,7
	XRT and/or Chemo	5	5,4
	Corticotherapy	3	3,2
	CRF	3	3,2
	ATCD Surgical	Surgical urinary lithiase	16
Hysterectomy		7	7,6
TURP		4	4,34

The main indication of double J probe insertion was obstructive nephritic colic(renal colic) in 62 patients (67.39%), followed by acute obstructive renal failure in 26 patients (28.26%) and therapeutic indication in 4 patients (4.34%) (after surgical treatment of *ureteropelvic junction obstruction* (UPJ) and retroperitoneal fibrosis "Ormond's disease") (Figure 1).

Etiologies were caused by urinary lithiasis with 57% of cases, followed by tumor caused diseases with 37.27% of cases, the major tumor pathology was the cervical tumor in 23.21% of the cases then prostate tumor in 8.69%, bladder tumor chez 3.2%, and digestive tumor in 2.17%. While the other etiologies accounted for 6.51% of cases, pyelo-ureteral junction syndrome was found in 4.34% of cases and retro-peritoneal fibrosis was found in 2.17% of cases. Regarding the duration of the double J-J stent, 71 sick (77.17%) had to carry the double J stent for less than 6 months while 21 patients (22.83%) had carried the stent for more than 6 months.

Clinically, lower back pain was found mainly in 31% of cases, followed by signs of bladder irritation in 27% of cases and fever in 4.34% of cases.

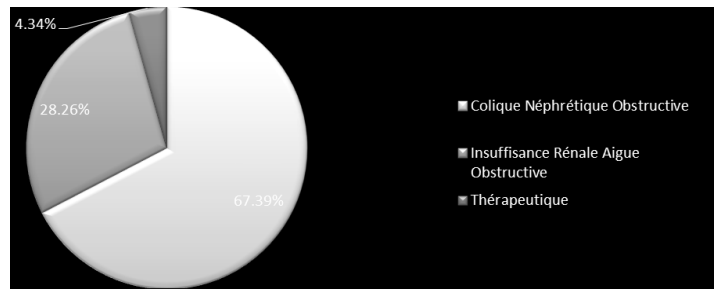


Figure 1: Distribution of patients according to indications.

On the bacteriological level, the cyto-bacteriological examination of the urine (CBEU) found Gram-negative bacilli as the main germs in 92% of the isolated cases with a predominance of *Escherichia coli* as the main gram-negative bacteria (44.10%), followed by *Klebsiella pneumoniae* (22%) and *Pseudomonas aeruginosa* (19%). The gram + bacilli were isolated in 8% of cases with a predominance of *Enterococcus Faecalis* (5%) (Table 2).

Table 2: Breakdown of Bacterial Species Isolated in ECBUs.

	Bacterial species	Number	Percentage (%)
Gram bacillus -	<i>Escherichia coli</i>	40	44,10
	<i>Klebsiella pneumoniae</i>	20	22,34
	<i>Pseudomonas aeruginosa</i>	14	15,27
	<i>Proteus mirabilis</i>	8	8,69
	<i>Enterobacter cloacae</i>	2	2,17
Gram Bacillus	<i>Enterococcus Faecalis</i>	5	5.43
	<i>Staphylococcus aureus</i>	3	3,26
	<i>Enterococcus faecium</i>	1	1,08

The study of *Enterobacteriaceae* sensitivity showed a low sensitivity to Ampicillin (11%), Amoxicillin + Clavulanic acid (19%), quinolones 42%, moderate sensitivity to Nitrofurans 61%, and trimethoprim (TMP) 63%, and sensitivity to aminoglycosides (amikacin and gentamicin) 77%, to imipenem 86% and Colistin 92% (Figure 2).

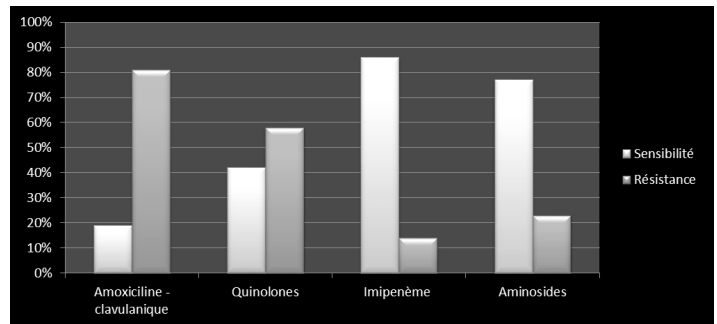


Figure 2: Profile of resistance and susceptibility of germs to antibiotics.

Fluoroquinolones were prescribed as the main antibiotic in 38% of patients, TrimethoprimT in 21% of cases, Aminoglycosides in 17% of cases, imipenem in 15% of cases, and amoxicillin-clavulanic in 8% of cases (Figure 3). The outcome was favorable in the majority of cases in which 79% of cases came back sterile and 21% retained the germ as CEBU showed.

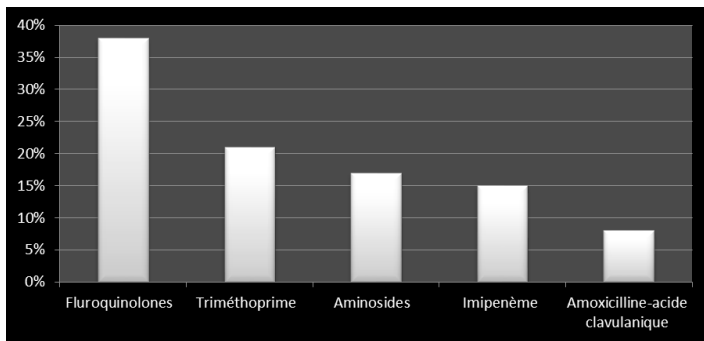


Figure 3: Distribution of patients according to the antibiotic treatment prescribed.

Discussion

The techniques of bypasses of the upper urinary tract can be performed permanently or temporarily by endoscopic, percutaneous, or by a combination of these two methods as a mixed technique. They help to secure the compromised function of one or both kidneys in fragile patients by effective urinary bypass [3]. The main indication for J stent is to maintain the permeability of the upper urinary tract in case of its acute or chronic obstruction, intrinsic or extrinsic [4]. However; this technique is often associated with complications including, urinary infection there is frequently reported. approximately 80% of nosocomial urinary tract infections are infections associated with bladder and double J catheter materials type [5].

Generally, patients are asymptomatic and may have symptoms such as pain, dysuria, fever, pollakiuria, hematuria, and in some cases serious complications such as acute pyelonephritis, bacteremia, chronic kidney failure, and it could lead to death [6]. The prevalence of the association between urinary tract infection and the double J tube can reach 28% [7]. Bacterial colonization plays an essential role in the pathogenesis of urinary tract infections on the stent [8.9]. Farsi Etal. reported a 68% colonization rate of stents and a 30% bacteriuria recurrence[10], Yenyol et al. reported a 16% incidence of urinary tract infections in patients with SDJ [11], while Lifshitz and al. reported a 31% colonization rate and 13% IU in 65 patients with SDJ [12]. In years our study noted a male predominance, this result does not match that of the article of which women are more affected [13]. There are multiple risk factors for IU on SDJ that may be common with other IU such as diabetes, pregnancy, and elements caused by immunosuppression (RTH, CTH, and CTC) and specific factors of JDS especially the duration of DJS wearing. Kehinde et al. reported a significantly low rate of infection (3.3%) in patients with kidney disease or diabetes (33.3 and 44.4%, respectively) [7] and reported a bacteriuria rate of 4.2% for DSDs withdrawn within 30 days and 34% for DBS withdrawn after 90 days. Cytobacteriological examination of urine identified *E. coli* as the main germ in 44.10% of cases, this result is similar to that of Paik, who had isolated *Enterococcus* and *E. coli* in 44% of cases, which is due to the rapid spread of this type of germ in the urine also through the distal tip of the stent [6].

Like any IU associated with the clinic, antibiotic therapy must be guided by the results of the Bacteriological urine test, by knowledge of local ecology (prevalence of the bacteria responsible and their resistance to antibiotics), and by the patient (in particular, the existence of urinary colonization)[13]. The main antibiotic prescribed is fluoroquinolones, which are associated with an ecological risk of antibiotic-resistant bacteria selection[14]. They should therefore be reserved for the documented treatment of situations where there is no resistance or intolerance to other recommended treatments[13].

Conclusion

Our study highlights the high incidence of urinary tract infections on SDB in urology with morbidity and mortality not to mention the economic impact that can cause, which requires perfect knowledge of indications, techniques of stent insertion, and complications. Our results allow us to identify some particularly exposed patients who need to be followed up to minimize these infectious complications.

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