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Research Article

Frequency of complications (Bleeding, Septicemia, displacement of PCN catheter) of ultrasonographic guided percutaneous nephrostomy in cases of obstructiveuropathy

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ABSTRACT

Objective: To determine the frequency of complications (Bleeding, Septicemia, displacement of PCN catheter) of ultrasonographic guided percutaneous nephrostomy in cases of obstructive uropathy

Material and methods: This case series study was conducted at Department of Urology, Bahawal Victoria Hospital, Bahawalpur from March 2018 to September 2018 over the period of 6 months. Total 82 patients with obstructive uropathy either male or female having age 20-60 years were selected. Post procedure complications (Bleeding, Septicemia, displacement of PCN catheter) were assessed.

Results: Total 82 patients with obstructive uropathy was selected for this study. Mean age of the patients was 39 ± 12.47 years. Out of 82 patients, septicemia was noted in 6 (7%) patients followed by bleeding 5 (6%) patients and PCN dislodgement or blockage in 8 (10%) patients. Out of 50 (60.98%) male patients, septicemia, bleeding and PCN dislodgement or blockage was found in 5 (10%) patients, 3 (6%) patients and 4 (8%) patients respectively. Female patients were 32 (39.02%) and septicemia was noted in 1 (3.13%) patients, bleeding was noted in 2 (6.25%) patients and PCN dislodgement or blockage was noted in 4 (12.5%) patients. Statistically insignificant association between complications and gender was noted with p value 0.642.

Conclusion: In present study complication rate was very low. So, PCN is a safe and effective urinarydiversion done under local anesthesia. It gives prompt relief to upper obstructive uropathy incritically ill patients. PCN is useful therapeutic procedure for pyonephrosis, preserving renal function and avoiding unnecessary nephrectomies.

Key words: Obstructive uropathy hydronephrosis, nephrostomy, bleeding, blockage

INTRODUCTION

Hydronephrosis consists in dilation of the urinary tract without this being necessarily pathological in nature. However, visualization of the ureter (> 7 mm) and calyceal dilatation are usually of pathological origin.[1] Giant hydronephrosis has been defined as dilatation of the pyelocalycial system with more than 1,000 cc urine retained, as well as when the size of the kidney occupies more than half the abdominal cavity and, generally, the degree of involvement is directly proportional to

the time of obstruction evolution.[2-3] Urinary obstruction relief is the most common indication for percutaneous nephrostomy; in several series of studies, it accounts for 85-90% of patients.[4] The three most common causes of renal obstruction in adults are urinary calculi and benign and malignant iatrogenic stenosis.[5]

Percutaneous nephrostomy consists in placing, guided by some imaging method (ultrasound, computed tomography, fluoroscopy), a catheter into the renal collecting system by means of a puncture though the skin.[6] This is intended not only to obtain an accurate diagnostic method, but also to place a catheter of adequate caliber to drain the collecting system or to extract lithiasis. Some of the most important aspects of the procedure include adequate patient selection, technique and performance of the procedure, as well as follow-up.[7]

OPERATIONAL DEFINITION

Septicemia: Characterized by a whole-body inflammatory state caused by severe infection and will be deemed as +ive if patient had fever or hypothermia (<36 C or >38 C), rapid breathing (>20/min), elevated heart rate (>90/min), confusion, and edema.

Bleeding: Any macroscopic blood loss through PCN site after procedure which required haemostatic agents and blood transfusion.

PCN dislodgement or Blockage:accidendal removal of PCN tube or blockage due to any debris or blood clot, necessitating reinsertion of PCN.

MATERIAL AND METHODS

This case series study was conducted at Department of Urology, Bahawal Victoria Hospital, Bahawalpur from March 2018 to September 2018 over the period of 6 months. Total 82 patients with obstructive uropathy either male or female having age 20-60 years were selected.

All the patients with bladder outflow obstruction, patients with any other systemic disease or severe coagulopathies were excluded from the study. Approval was taken from ethical review committee and written informed consent was taken from every patient.

Percutaneous nephrostomy was performed by using 1% lignocaine subcutaneously at the puncture site. All the patients wasgiven antibiotics pre-operatively. Local anesthesia was injected and a stab incision was given at the puncture site. Puncture needle of 18-gauge Chiba needle wasinserted at the renal angle or at the posterior axillary line under ultrasound guidance. After confirmation of the needle in the kidney, the styletwastaken out.

Urine or pus was drain with a disposable syringe. Soft end of floppy J guide wire was passed through the needle and the needle was removed. The tract wasdilated with Teflon facial dilators more than the diameter of the nephrostomy tube. After tract dilation a pig tail nephrostomy tube was passed over the guide wire into the collecting system, secured with silk no. 1 and urinary bag was attached.Demographic profile of the patientswasrecorded in pre designed profroma. Post procedure complications (Bleeding, Septicemia, displacement of PCN catheter) was assessed.

Data was entered on computer software SPSS version 16. The quantitative variables of the study i.e. agewas presented as Mean±SD. The qualitative variables like gender, frequency of complications (Bleeding, Septicemia, displacement of PCN catheter) were presented as frequency and percentage. Pie chart was drawn for frequency of complications. Stratification was done for age and gender. Post stratification chi-square test was applied. P.value ≤ 0.05 was considered as significance.

RESULTS

Total 82 patients with obstructive uropathy was selected for this study. Mean age of the patients was 39 ± 12.47 years. Out of 82 patients, septicemia was noted in 6 (7%) patients followed by bleeding in 5 (6%) patients and PCN

dislodgement or blockage in 8 (10%) patients. (Fig. 1)

Patients were divided into two age groups i.e. age group 20-40 years and age group 41-60 years. Total 44 (53.66%) patients belonged to age group 20-40 years and 38 (46.34%) patients belonged to age group 41-60 years. In age group 20-40 years, septicemia was noted in 3 (6.82%) patients followed by bleeding in 1 (2.27%) patients, PCN dislodgement or blockage was noted in 7 (15.91%) patients and 33 (75%) found without any complication. In age group 41-60 years, total 3 (7.89%) patients were found with septicemia, 4 (10.83%) patients with bleeding, 1 (2.63%) patients with PCN dislodgement or blockage and no complication was noted in 30 (78.95%) patients. After apply chi-square test, no effect of age group on development of complications was noted with p value 0.110. (Table 1)

Out of 50 (60.98%) male patients, septicemia, bleeding and PCN dislodgement or blockage was found in 5 (10%) patients, 3 (6%) patients and 4 (8%) patients respectively. Total 38 (76%) male patients were found without complications. Female patients were 32 (39.02%) and septicemia was noted in 1 (3.13%) patients, bleeding was noted in 2 (6.25%) patients and PCN dislodgement or blockage was noted in 4 (12.5%) patients. Total 25 (78.13%) female patients were found without any complication. Statistically insignificant association between complications and gender was noted with p value 0.642. (Table 2)

Fig. 1: Frequency of complications

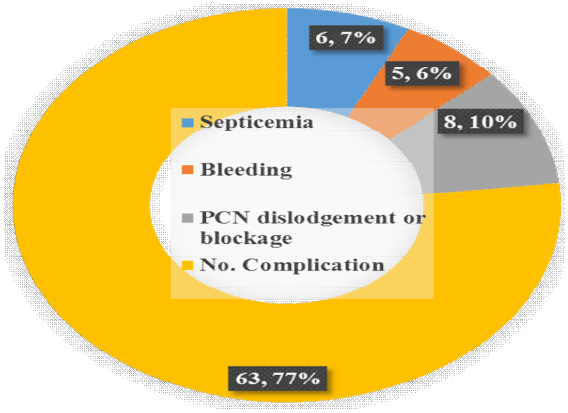

Table 1: Association of complications with age group

Age Group	Complications				Total	P value
	Septicemia	Bleeding	PCN dislodgement or blockage	No Complication		
20-40 Years	3 (6.82%)	1 (2.27%)	7 (15.91%)	33 (75%)	44 (53.66%)	0.110
41-60 Years	3 (7.89%)	4 (10.83%)	1 (2.63%)	30 (78.95%)	38 (46.34%)	
Total	**6 (7%)**	**5 (6%)**	**8 (10%)**	**63 (77%)**	**82**	

Table 2: Association of complications with gender

Gender	Complications				Total	P value
	Septicemia	Bleeding	PCN dislodgement or blockage	No Complication		
Male	5 (10%)	3 (6%)	4 (8%)	38 (76%)	50 (60.98%)	0.642
Female	1 (3.13%)	2 (6.25%)	4 (12.5%)	25 (78.13%)	32 (39.02%)	
Total	6 (7%)	5 (6%)	8 (10%)	63 (77%)	82	

DISCUSSION

In the past few decades, ultrasound-guided percutaneous nephrostomy, followed by fluoroscopic study, has been widely used for the relief of upper urinary tract obstruction, regardless of the cause that producedIt.[8]The reported success rate for percutaneous nephrostomy is 98-99%, and this is defined as successful placement of catheter of sufficient size to allow for adequate drainage of the urinary tract or to allow successful tract dilatation for further interventional procedure. The success rates have been reported to be lower in cases of non-dilated collecting system or complex calculus disease (e.g. staghorn calculus) where a success rate of about 85% was reported.Despite the high success rates however, complications are frequently encountered, be it minor or major, with a reported incidence of approximately 10% of cases.[9]

Usually, in tertiary care hospitals, ultrasound-guided percutaneous nephrostomy is part of the treatment of many patients with neoplastic conditions and, therefore, it is our duty to know and assess the patients' status, since a poor health status could be associated with different types of complications. However, improvement of the technique, which is important and essential, should not be overlooked and has to be taken into account. Currently, timing of the procedure, comorbidities and patient health status are subjects under debate, as well as the required experience of the executor and possible complications resulting from the procedure.[10]

Objective of the present study was to determine the frequency of complications (Bleeding, Septicemia, displacement of PCN catheter) of ultrasonographic guided percutaneous nephrostomy in cases of obstructiveuropathy. Total 82 patients was selected for this study. Mean age of the patients was 39 ± 12.47 years. In one study by Rodríguez-Pontones et al,[11]total of 84 patients aged 31-79 years were undergone ultrasound-guided percutaneous nephrostomy. Mean age of the patients was 50.7 ± 13.2 years, which is little higher than mean age of our study because we were selected patients having age from 20-60 years. In same study, there were 30 males (35.7%) and 54 females (64.3%). In our study 60.98% patients were male and 39.02% patients were female.NaeemM et al[12], Wilson JR et al[13] and Karim R et al[14]also reported male predominance as compared to female. Ahmad I et al[16] reported mean age as 42.33 ± 9.65 years with 72.67% were male and 27.33% female with male to female ratio of 2.6:1. In our study, out of 82 patients, septicemia was noted in 6 (7%) patients followed by bleeding in 5 (6%) patients and PCN dislodgement or blockage in 8 (10%) patients.In one study byNaeem M et al,[12]post procedure bleeding was noted in 4% patients. Similarly JalbaniMH et al[15] and Romero FR et al[16]reported post procedure bleeding as 5.0% and 3.5% respectively in their studies. In another study by Olivera ST et al[17]reported frequency of bleeding as 21.5%. Karim R et al[14]reported frequency of bleeding as 9.5%. In one study by Naeem Met al[12], reported frequency of post PCN septicaemia was 2%. In literature, catheter dislodgement vary from 4.5% to 11.6%.[18]In one study by Saeed K, displacement of PCN catheter was noted in 5.61% patients.[19]In one study, 300 patients were enrolled and procedure was successful in all encounters. The complications were categorized as early and late complications. Early complications were sepsis in 6 (2%) patients, retroperitoneal haematoma in 5 (1.6%) patients, bleeding in 2 (0.6%), and urinoma in 1 (0.3%). Late complications included catheter blockage in 15 (5%) patients, and dislodgement of catheter in 7 (2.3%) patients.[20]

CONCLUSION

In present study complication rate was very low. So, PCN is a safe and effective urinarydiversion done under local anesthesia. It givesprompt relief to upper obstructive uropathy incritically ill patients. PCN is useful therapeutic procedure for pyonephrosis, preserving renal function and avoiding unnecessary nephrectomies.

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