Post percutaneous nephrolithotripsy nephrostomy site tuberculosis: A report of six cases

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Abstract

With the increase in endoscopic surgery, there is a growing concern about the effectiveness of sterilizing reusable equipment by immersion in 2% glutaraldehyde. Although reports of port site tuberculosis (post laparoscopy) are there in the literature, those of nephrostomy site post percutaneous nephrolithotripsy are not available. We describe the clinical features and treatment of six patients who presented with biopsy-proven skin tuberculosis at the nephrostomy-site for non-healing wound.

Key Words: Nephrostomy, percutaneous nephrolithotripsy, tuberculosis

INTRODUCTION

Percutaneous nephrolithotripsy (PCNL) is an established modality of renal stone management.[1] However, with the coming up of multispecialty units, sharing of theatre space and other equipments has increased the probability of cross-infection. We report a series of six cases of nephrostomy tract site tuberculosis (TB) following PCNL at our multispecialty unit. To our knowledge, this is the first case series of such kind.

CASE REPORT

During the period of March 2009 till February 2010, 75 PCNLs were performed in our unit. The standard technique followed for the procedure is explained in brief. Retrograde catheter (5fr.) was placed in the ipsilateral ureter under fluoroscopy in supine position. The patient was then placed in the prone position and the puncture was made using a three-part needle (Angiomed 1.3 mm (17.5G)) under fluoroscopy control after retrograde opacification of the pelvicaliceal system via the ureteral catheter. An angle tip terumo wire (Radifocus; Terumo wire) was then positioned in the upper ureter. The tract was then dilated, initially using serial Teflon dilators up to 10fr. followed by placement of Alken’s rod. The subsequent dilatation was achieved using serial Alken metal dilators and an Amplatz sheath (Cook Surgical) of adequate caliber used (Size 26/28/30 Fr.). The PCNL was then completed using Wolf nephroscope (24fr.) and pneumatic lithotripsy. An adequate-size nephrostomy was placed at the end of the procedure. All our patients recovered well. Nephrostomy was removed on the second postoperative day after the check X-ray KUB. The nephrostomy tract site was then dressed with sterile dressing. Patient was discharged with instructions to remove the dressing after 72 h and follow up after one month if asymptomatic.

To keep the cost of the procedure reasonable we reuse the puncture needle, Teflon dilators, and the Amplatz sheath. All of these were rinsed adequately immediately after the end of the procedure and blow-dried. They were then placed along with the nephroscope in a 2% glutaraldehyde solution for a minimum of 45 min prior to the next procedure.
Patient demography
Six of our 75 patients presented with persistent discharge from the nephrostomy site. “Non-healing” was defined as nephrostomy sites that had not healed within three to four weeks after nephrostomy removal. Table I gives the clinical details and mode of presentation of these patients. Average age of presentation was 39.2 ± 12 years. Of the six patients four were males and two females. Four patients had undergone the procedure on the right side and the remaining two on the left side. None of the patients had a previous history suggestive of TB and had a normal chest X-ray. Average time of presentation was 35.5 ± 6.8 days. The commonest symptom was mild pain and minimal but persistent discharge for the nephrostomy site.

Table 1: Demographic details and presentation of the patients post PCNL

| Age | Sex | Side | Puncture site | ORT* (min) | Day of presentation | Presentation                        |
|-----|-----|------|---------------|------------|---------------------|------------------------------------|
| 41  | M   | R    | LC            | 70         | 42                  | Discharging sinus with erythema    |
| 53  | M   | L    | LC            | 65         | 40                  | Discharging sinus with erythema and discomfort |
| 31  | F   | R    | UC            | 60         | 41                  | Painful discharging sinus          |
| 25  | F   | R    | MC            | 65         | 30                  | Painful discharging sinus          |
| 33  | M   | L    | LC;MC         | 80         | 25                  | Discharging sinus with erythema    |
| 52  | M   | R    | LC            | 70         | 35                  | Discharging sinus with pain        |

[*]ORT: Operative time in min

Figure 1 (a and b): Erythematous discharging lesion at the nephrostomy site in two different patients

Figure 2: (a) Granuloma cells at the tract site (under high power); (b) Granuloma cells at the tract site (under low power)
Patients were then started on antitubercular medication—four drugs, (rifampicin, isoniazid, pyrazinamide, and ethambutol) for the first two months and then two drugs (rifampicin and isoniazid) for the remaining four months—in consultation with a dermatologist and this is in accordance with the current literature. Subsequently the wounds healed as the patients responded to the antitubercular medication. Average time to complete wound healing was $22 + 6$ days after the start of antitubercular medication. All these patients have completed six months’ follow-up and are doing fine.

**DISCUSSION**

Port site TB has been reported following laparoscopic cholecystectomy. However, nephrostomy site TB following PCNL has not been reported.

In India TB remains the major health problem with 1.8 million new cases of TB detected every year of which one-fifth are extra-pulmonary. The commonest symptoms of genitourinary TB are irritative lower tract symptoms i.e. frequency, urgency, and dysuria. Till now it has been noted that port site TB is usually due to the improper sterilization of the laparoscopic instruments and only one case report is published which has attributed port site TB to an endogenous source. Our findings were similar to what has been reported in the literature as none of our patients gave any past history suggestive of TB (weight loss, fatigue, persistent low-grade fever or lower urinary tract symptoms) nor had they any evidence of the same on intravenous urography (IVU) or chest X-ray. Moreover, we had a cluster of six patients which further suggests that there was some breach in the sterilization of instruments rather than an endogenous source.

The most common practice of instrument “sterilization” in India and many parts of the developed and developing world has been to immerse instruments in 2% alkaline glutaraldehyde for 20 min. Although sterilization is defined as “the complete elimination of all forms of microbial life”, it is now widely agreed that 2% glutaraldehyde achieves high-level disinfection and not sterilization. This has been further reinforced by Griffiths et al., who have highlighted the failure of a 20-min instrument soak in 2% alkaline glutaraldehyde to sterilize instruments. In another study, mycobacterium TB was present in one of five scopes after even after 45-min exposure.

Although literature regarding guidelines for the reprocessing of flexible endoscopes used for gastrointestinal procedures is available, there are no published guidelines for the use of the same in endourology.

In India where cost is a great repressor, the use of all new disposable items for an endoscopic procedure makes the cost of the procedure exuberant. Hence here we try to strike a balance between the safety of the procedure, and the cost of the procedure so as not to make it unaffordable for the common patients. This is achieved by re-sterilization of the disposable reusable material. Since there are no definitive guidelines available, we rely on the literature available for the other specialty for the sterilization of our reusable items.

The majority of the cases with port site TB reported in the literature had mycobacterium TB but cases with atypical mycobacterium (Mycobacterium chelonei) have also been noted. We did not do culture sensitivity and treated our patients on the basis of histopathology and they responded well to the conventional antitubercular treatment (ATT). However, we would suggest a culture and sensitivity especially in those who do not respond to the standard ATT. Also, at times the tubercular lesion may heal initially with conventional anti-TB drugs, with late recurrence. In these cases conventional drugs may not be effective and antibiotics as per the sensitivity report are required.

A series of six cases in our unit was a cause of concern as it drastically increased the morbidity in them. Morbidity was in terms of prolonged dressings and long-term ATT (six to nine months). This also adds to the cost. Average time to nephrostomy site healing in our patients was $22 + 6$ days which was faster than that reported by Narayanan et al., who reported two months for the wound healing in their patient. The longer time taken by the patient in their report can be explained by the fact that the source of contamination was endogenous and the patient formed an abscess and a subsequent sinus which would have taken a longer time to granulate.

Since ours was a common operation theatre which was shared by the laparoscopic surgeons, the real cause of contamination was difficult to judge, especially when none of our patients had prior history suggestive of TB. Although we share a common operation theatre with general surgeons, now we keep our instruments in a 2% glutaraldehyde solution tray dedicated exclusively for urology instruments. We strongly believe that the source of contamination was the laparoscopic equipment, as abundant literature of port site TB following laparoscopic surgery is available. In addition, we make sure that our theatre staff handling the equipment postoperatively and preparing it for the next procedure is well aware and well-informed about the sterilization/disinfection process.

Now with the Sterad sterilization system, which exploits the synergism between peroxide and low-temperature gas plasma to rapidly destroy microorganisms, or with newer disinfectant glucoprotamin we may get foolproof sterilization, which shall go a long way in avoiding such unwarranted complications. However, the initial cost of the instillation is high. Then the
same can be shared with the laparoscopic surgeons for their
equipment thus cutting down the cost.

CONCLUSION

In conclusion, any patient with persistent discharging non-
healing nephrostomy wound, a diagnosis of skin tuberculosis
should be considered. This is more likely when the urology
operation theatre is being shared with the general surgeon
counterparts while working in a multispecialty hospital. In
addition, thorough cleaning of the endoscopic instruments and
sterilization should be the goal to prevent such complications.

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