



Using Polidocanol in Treatment of Simple Renal Cyst

Bayram Guner¹ · Bilal Gunaydin²

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Abstract

The aim of this study was to assess the efficacy of polidocanol in patients with simple renal cysts who were not eligible for surgery due to comorbidities. Twenty-nine patients with Bosniak type 1 or 2 were assessed retrospectively. All of the cysts were exophytic. All of the patients were injected a maximum 20 mL 3% polidocanol as a sclerosing agent following cyst aspiration. Vanishing of symptoms and decrease in size to 10% of the initial size were accepted as complete remission, decrease in size to 10–50% of the initial size was accepted as partial remission, and a return to the initial size of the cyst in a short time or decrease in size > 50% of the initial size was accepted as failure. The results of an average of 14 months' follow-up are reported. Complete remission was seen in 18 (62%) patients, partial remission was seen in 5 (17.2%) patients, and failure was observed in 6 (20.68%) patients during an average of 14 months' follow-up. Percutaneous sclerotherapy using polidocanol can be used safely and with low complication rates in the elderly population with comorbidities.

Keywords Sclerotherapy · Renal cyst · Percutaneous therapy · Minimally invasive treatment

Introduction

Although simple renal cysts found incidentally in adulthood are often asymptomatic, they can cause pain, hypertension, compression on the kidneys, and hematuria and need to be treated when they reach large sizes [1–3].

Open laparoscopic and robotic deroofing techniques are used in curative treatment of simple renal cysts, and percutaneous interventions may be offered as an alternative treatment in patients who are not eligible for surgery or who cannot receive anesthesia because of their comorbidities. We aimed to report the results of polidocanol injections, which we used as a sclerosing agent in patients undergoing percutaneous renal cyst puncture in our practice.

Patients and Methods

In our study, we prospectively evaluated the results of 29 patients (16 females and 13 males) in whom we performed percutaneous renal cyst puncture and polidocanol injection between 2012 and 2018. Patients with a history of polycystic kidney disease, who were treated for renal cyst before, with cysts smaller than 7 cm, parapelvic cysts, uncorrected coagulopathy, active urinary infection, Bosniak category 2F or above cysts, and cysts that were shown to be related with the pelvicalyceal system with pre-surgical imaging techniques were excluded from the study. All patients underwent urinary ultrasonography and computed tomography with contrast. Serum creatinine level measurements, complete blood counts, coagulometric tests, urinary analysis, and urine culture tests, if needed, were performed in all patients.

In the prone or lateral decubitus position, 2% lidocaine was injected to the skin area and the area of the needle path, followed by direct puncture to cysts using an 18-G percutaneous needle under ultrasound guidance. After samples for cytologic tests and cultures were taken, cyst aspiration was completed. Then, 3% polidocanol was injected into the cyst up to 10% of the aspirated cyst content or 1 a maximum 20 mL (maximum 200 mg) and aspirated after waiting for 10 min. There were any 2 antidotes for overdose. There was no

✉ Bayram Guner
gunerbayram@yahoo.com

¹ Department of Urology, Edremit Korfez Hospital, Balikesir, Turkey

² Department of Urology, Omer Halisdemir University, Nigde, Turkey

toxicity or side effect in all patients. All patients were monitored for 2 h after the surgery. After surgery, all patients were given oral ciprofloxacin for 1 week. Vanishing of symptoms and decrease in size to 10% of the initial size were accepted as complete remission, decrease in size to 10–50% of the initial size was accepted as partial remission, and reaching of the cyst to its initial size in a short time or above in size to > 50% of the initial size was accepted as failure. All patients were followed up with ultrasonography 1 week, 1 month, and 3 months after surgery and then once every 6 months after surgery. The characteristics of the patients are shown in Table 1.

Results

The contents of the cysts were completely aspirated under ultrasound guidance in all patients. There was no bleeding causing hospitalization, additional analgesic requirement, prolonged hospitalization time, or development of urinoma in any patients. Infection occurred in 1 patient and this patient was treated parenterally without hospitalization. The average duration of surgery was 29 min. Complete remission was seen in 18 (62%) patients, partial remission was seen in 5 (17.2%) patients, and failure was observed in 6 (20.68%) patients during an average of 14 months' follow-up (Table 2). The relapses occurred in the first 3 months. In the late period, patients did not develop relapse. No pathologic findings were detected in cytology and culture samples.

Discussion

Many sclerosing agents have been used to destruct the epithelial layer covering the inner surface of the cyst to lead cyst walls to stick together and prevent re-expansion because cyst aspiration alone has high recurrence rates [4–12]. One such agent is polidocanol, which leads to cyst walls adhering to

Table 2 Rates of success and complications

Complete remission	18 (62%)
Partial remission	4 (17.2%)
Failure	2 (20.68%)
Complication	1 (3.4%)

each other by destructing the intra-cystic endothelial layer and creating a foreign body reaction. The most appropriate sclerotherapy agent has not yet been identified due to the gradual decrease in late-term success rates and due to adverse events caused by local and systemic absorption of the injected substance [4, 7]. Ideal sclerosing agents are expected to be painless, easily prepared, and bactericidal. Their local and systemic adverse events are expected to be low and their success rates are expected to be high. The promising results of the sclerosing effect of polidocanol injections on large vascular structures with dynamic blood flow in patients with hydrocele and esophageal varices where coagulation parameters are relatively affected have led to the questioning of the availability of its use in kidney cysts, and this prediction has been investigated in many studies in the literature. In the literature, the success rates of percutaneous renal cyst treatment range from 45 to 93% in patients where polidocanol was used. The most important reasons for the difference between success rates were the chosen patient groups, non-standard success criteria, and doses used [12–15].

Our study group consisted of elderly patients who could not risk anesthesia because of their comorbidities. Percutaneous treatments were more preferred due to less pain and bleeding, shorter duration in hospital, easy feasibility, and good tolerability. In almost all studies, it is stated that the use of sclerosing agents in addition to aspiration alone significantly reduced recurrence rates [16]. We used this treatment in patients with exophytic cysts because sclerosing agents and polidocanol cause stenosis in the main vascular structures in the renal sinus and ureteropelvic junction through a local effect. Accordingly, we saw no complications in our patients. In our study, on isolated patient group, polidocanol was not injected directly into the vascular system away from the vascular risk zone.

Although polidocanol has advantages such as being painless, it does not require extra anesthesia inside the pigtail catheter and cyst and creates less bleeding due to its effect on venous structures, and injections in small amounts cause significantly less adverse events and complications; we cannot say that polidocanol has more advantages over other sclerosing agents in terms of complete remission. However, we emphasize that this painless procedure allows for long-term installation because, as with all sclerosing agents, the drug does not contact the entire cyst wall, which may partially explain the failure. In one of the few prospective studies in the literature, Agarwal et al. showed that longer duration of stay of a sclerosing agent in the cyst reduced recurrence rates, and both

Table 1 Patients characteristics

Number of patients	29
Mean age (years)	69
Palpable mass	8
Pain	11
Microscopic hematuria	2
Mean cyst diameter (mm)	78 (71–112)
Mean number of cysts	1.7 (1–3)
Female/male ratio	1.4
Diabetes mellitus	16
Hypertension	20
Chronic obstructive pulmonary disease	9
Cerebrovascular disease	6

percutaneous sclerotherapy and laparoscopic deroofing had similar success rates [17]. We believe that additional studies are needed on this subject.

Limitations of this study were the inclusion of only patients with exophytic cysts and relatively small number of patients, a single-centered study and the absence of comparison groups.

Conclusions

Percutaneous sclerotherapy should be offered as an alternative therapy to surgery in elderly patients with comorbidities. Polidocanol is one of the most appropriate agents to be used in sclerotherapy due to it being painless and easy to use and has good tolerability. We think that prospective, multi-center, randomized studies with larger numbers of patients are required to establish the most appropriate sclerosing agent and its dose.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflicts of interest.

Statement of Ethics Research was conducted ethically in accordance with the World Medical Association Declaration of

Helsinki. In the manuscript, patients have given their written informed consent to publish their case (including publication of images). We allow the ethics committee of Omer Halisdemir University.

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