

Ultrasound Guided Aspiration And Sclerotherapy For Renal Cysts

Dr. Mohammed Bassil Ismail¹, Dr. Nibbras Ibrahim Al-Hamdani², Dr. Abbas Fadhil Obaid³, Dr. Jaber Abdulsattar Hassan⁴, Dr. Saad Dakhil Farhan⁵

^{1,5} urology department, college of medicine, university of Baghdad, Baghdad, Iraq

^{2,3,4} Urology department, surgical subspeciality hospital, Baghdad medical city complex, Baghdad, Iraq

Abstract

OBJECTIVE: To evaluate the efficacy of ultrasound-guided aspiration and sclerotherapy for treatment of renal cysts.

METHODS: forty cases of symptomatic renal cysts were treated with ultrasound-guided aspiration followed by sclerotherapy (iodophor) into the cysts was given. The patients were followed up for 6 months to 18 months.

RESULTS: Full recovery was achieved in 30(75%) cases and improvement in 7(17.5%) cases. Recurrence was found in 3(7.5%) case after the treatment.

CONCLUSIONS: ultrasound-guided aspiration and sclerotherapy with iodophor is safe, minimally invasive, and highly effective for treatment of symptomatic renal cysts.

KEY WORDS: renal cyst, sclerotherapy, iodophor, aspiration.

INTRODUCTION

Simple renal cysts are common benign diseases in the kidneys. The incidence of renal cysts increases by more than sevenfold with advancing age, from 5.1% in the fourth decade to 36.1% in the eighth decade [1]. Renal cysts are mostly asymptomatic and rarely can regress spontaneously. Large or multiple cysts may become clinically evident because of compression of the renal pelvis or adjacent organs [2–9]. The classic surgical treatment is associated with some morbidity, and laparoscopy is more invasive than percutaneous aspiration and sclerotherapy [10–13].

In most patients, renal cysts are asymptomatic and usually diagnosed incidentally through imaging studies [14]. Sonographic features of a simple renal cyst are defined as a round, smooth-walled mass with no internal echoes and causing distal echo-enhancement [11]. As the ultrasonic definition of simple renal cysts is well established, further investigations, such as intravenous urography (IVU), CT scan, contrast injection, or surgical exploration, are less common in modern practice.

Asymptomatic renal cysts may simply be followed up and often do not require treatment; however symptomatic renal cysts must be treated, initially beginning with analgesic medication, although poor responders may require other more invasive methods. At present, the commonly used treatment methods include percutaneous aspiration with or without sclerosing agent injection, surgical resection, and laparoscopic surgery; however there is no current consensus on which method is superior.

If the cyst is large, it causes pain or manifests as a palpable mass. Infection, hypertension, and obstruction of the ureter may be associated with renal cysts [15,16].

Management of symptomatic renal cysts can be accomplished by several methods. Surgical resection still has a role in some cases, but laparoscopic decortication or marsupialization of simple renal cysts was recently introduced to reduce procedure-related morbidity (27-30%). However, both modalities are invasive and require general anesthesia, which brings with it its accompanying operative morbidity and complications. Thus, they have been replaced by minimally invasive approaches that are based on percutaneous needle aspiration or sclerotherapy [18]. Aspiration without sclerotherapy of simple renal cysts is minimally invasive but has a high recurrence rate that may be greater than 90% [14,19]. Aspiration followed by sclerotherapy has been reported to have better success rates than simple aspiration, with a much lower recurrence rate [18,2,19].

Although a simple renal cyst is usually asymptomatic and discovered incidentally [1], treatment is undoubtedly still indicated in symptomatic patients. Significant pain, compression of the pelvicalyceal system and possibly related hypertension or haematuria are indications for intervention [11–18].

The classic treatment of symptomatic renal cysts is decortication, which can be done by open surgery or laparoscopy. Other treatment options include endoscopic marsupialization, percutaneous endoscopic resection and percutaneous aspiration with or without sclerotherapy [21]. Surgical treatment is associated with some morbidity and even mortality, especially in elderly patients [13]. Laparoscopic decortication is effective [11,22] and some authors recommended it as the next step for a recurrence after simple aspiration that initially relieved the pain [11]. However, laparoscopy is more invasive than percutaneous aspiration and sclerotherapy, with more potential complications. Endoscopic marsupialization is best used for cysts that abut the intrarenal collecting system, while percutaneous resection is more invasive than simple aspiration and sclerosis, making these options of unclear advantage [21] and of limited use. Aspiration without sclerotherapy of simple renal cysts is minimally invasive but has a high recurrence rate that may be >90% [11,16]. Aspiration followed by sclerotherapy has been reported to have better success rates than simple aspiration, with a much lower recurrence rate [19,18,16,8,23,36].

Most simple renal cysts are asymptomatic, but some patients have symptoms that are likely to be related to their cysts. Pain is the most common symptom [11,19] but hypertension [19,18,24], haematuria [19,20,25] and renal mass [11,19] are occasional presentations. In the present series, renal mass, hypertension and haematuria were the main presentation in 15%, 18% and 10%, respectively, and renal pain was invariably present in all patients.

Percutaneous needle aspiration of the cystic fluid guided by ultrasound or CT is commonly performed for the treatment of symptomatic renal cysts. However, renal cysts treated by simple aspiration frequently recur because they are lined by secretory epithelium with a high rate of fluid reaccumulation. Attempts have been made to destroy the secretory epithelium by injection of various sclerosing agents into the cysts to reduce the rate of recurrence. [26,27].

The optimum agent for renal cyst sclerotherapy remains to be determined, whether 95% alcohol [11,19,16,8,23] or 99% alcohol [20,18,36,4,29]. Other sclerosing materials reported with variable degree of success include bismuth phosphate, minocycline hydrochloride [21], povidone-iodine [31] and acetic acid [31]. Some new agents were reported, with promising efficacy using single injections of sclerotherapy, e.g. β -emitting radionuclide, ^{166}Ho -chitosan complex [30] and polidocanol [28], with complete or nearly complete resolution rates of 90% and 86%, respectively.

Percutaneous renal cyst aspiration is a minimally invasive procedure that may be performed under ultrasound or CT guidance. In 1989, Holmberg et al.(4) arranged 156 patients with renal cysts into 3 treatment groups: the first group which received no treatment formed the control group, and during follow-up averaging 3 years, the renal cysts of 25% of patients had enlarged. The second group only underwent percutaneous aspiration that the disappearance of cysts in 10% of patients, while during 24 months of follow-up the average cyst size was 90% of the original.(4) However compared to the first group, the changes in size did not reach statistical significance. In the third group, a sclerosing agent, bismuth phosphate, was also injected after percutaneous aspiration. This resulted in the disappearance of cysts in 44% of patients, while in the remaining patients, the average sizes were also reduced to 21% of the original after 3 to 4 years of follow-up. From that study, it can be seen that the results of performing percutaneous aspiration alone, without injecting a sclerosing agent, were indeed inferior to those after sclerosing agent injection.(4)

PATIENT AND METHOD

This study was done in the period from June 2014 till September 2016 in surgical subspecialty hospital, medical city complex included 35 patients, 24 males and 16 females. The patients ranged in age from 40 to 70 years old. The predominant symptom in all patients was loin pain, with radiation to the pelvis in some cases. Backache was another common symptom. Two patients had hematuria.

The inclusion criteria All cysts fulfilled the strict sonographic criteria for simple renal cysts: oval shape. Imperceptible cyst wall thickness, absence of septation, internal echoes and acoustic enhancement.

The exclusion criteria included previously treated renal cysts; multiple, unilateral renal cysts; renal impairment; communication between the cyst and the collecting system; polycystic or dysplastic kidneys; renal cysts associated with previous tumors; and peripelvic renal cysts.

For single-session sclerotherapy this is done as outpatient procedure in the polyclinic patients were placed in prone position. After identification of the renal cyst using US, infiltration the selected puncture site with 1% xylocaine. After placing the puncture needle into the cyst. The renal cyst fluid was aspirated and its volume was recorded. The fluid was sent for bacteriologic, biochemical, and cytologic tests.

Then sclerosing agent (iodophor) was injected into the cyst its amount is 10% of the total recorded cyst volume; maximal amount of sclerosing agent was limited to 50 mL for a large cyst. The patient was instructed to roll into supine, prone, and lateral decubitus positions at 5- to 10-min intervals during the procedure to increase contact between all surfaces of the cyst and the iodophor. Then the sclerosing agent was withdrawn, and complete deflation of the cyst cavity.

After the procedure, the patient was sent to the observation room of the urology polyclinic. The patient was then discharged from the polyclinic if there were no complications during 2-hour observation period.

Minor complications were pain and fever in two patients and slight hematuria in one patient, which resolved with conservative measures.

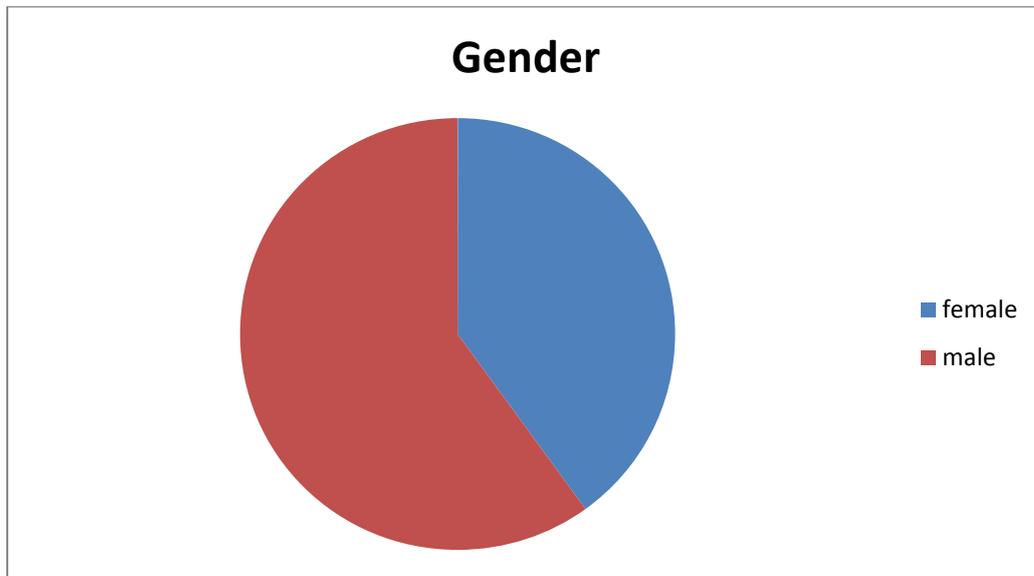
The patients were followed up by performing ultrasound 6 months after the procedure. The maximum diameter of the cyst was measured and compared with the pretreatment diameter. The relief of symptoms and disappearance of the renal cyst were considered to be complete regression. The relief of symptoms along with a reduction in the diameter of the cyst by more than one half was considered partial regression. Treatment was considered to have failed when the cyst recurred to more than one half of its pretreatment diameter or the symptoms persisted.

RESULTS

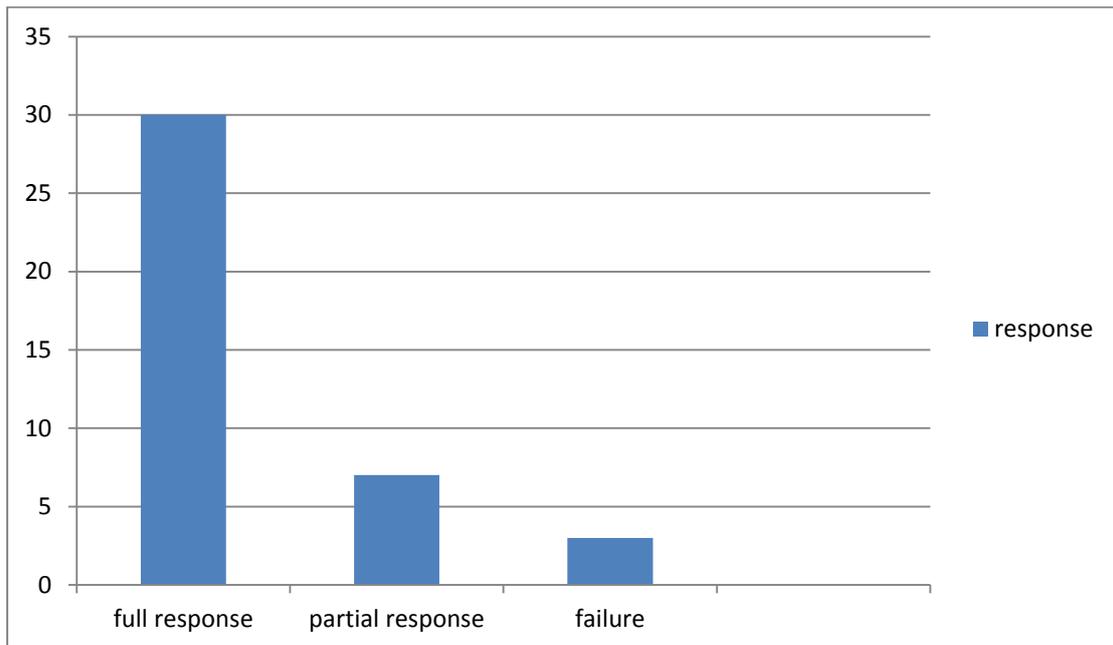
This study was done in the period from June 2014 till September 2016 in surgical subspecialty hospital, medical city complex included 40 patients, 24 males(60%) and 16(40%) females(figure 1). The patients ranged in age from 40 to 70 years old.

Full recovery was achieved in 30(75%) cases and improvement in 7(17.5%) cases. Recurrence was found in 3(7.5%) case after the treatment(figure 2).

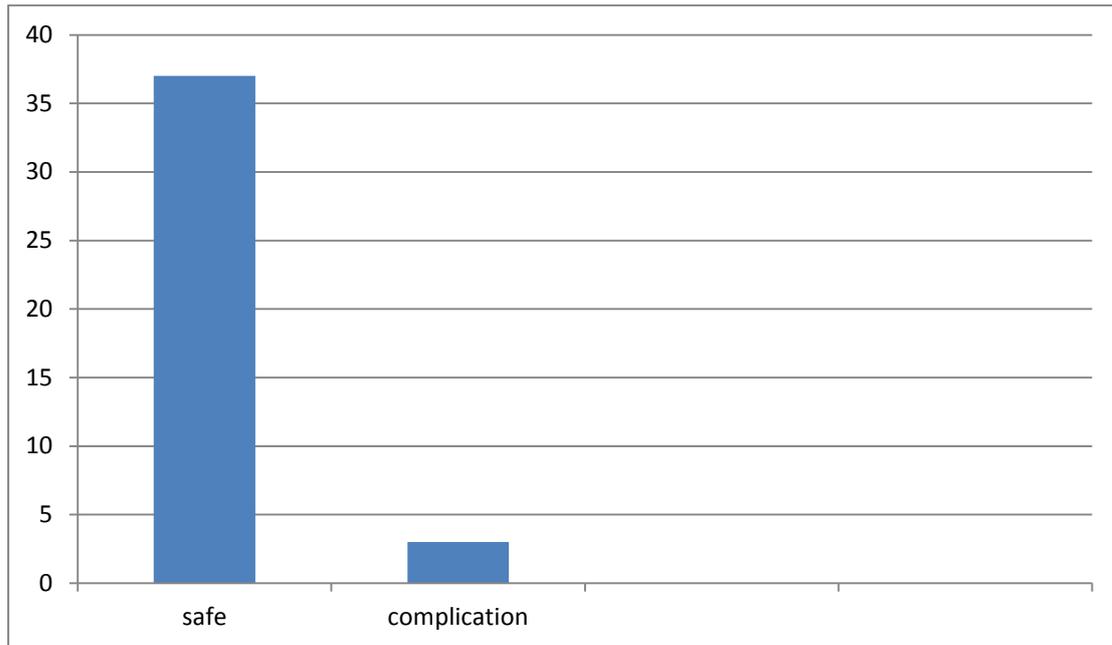
Minor complications were pain and fever in two patients(5%) and slight hematuria in one patient(2.5%), which resolved with conservative measures.



figure(1)



Figure(2)



Figure(3)

DICUSSION

Although the vast majority of simple renal cysts are entirely asymptomatic and do not require treatment, intervention is needed when they are symptomatic and cause obstruction of the urinary tract [8–21]. The causes of renal cysts are not well understood. Ischemia, local obstruction of nephrons with subsequent proximal nephron dilation, and small diverticula on renal tubules increasing with age have been implicated [32, 33]. Most renal cysts are asymptomatic and are discovered incidentally on imaging studies. Only symptomatic or complicated cysts require treatment. Several treatments have been proposed, excision whether surgical or laparoscopic [43], simple percutaneous cyst aspiration [35], and percutaneous cyst aspiration followed by instillation of a sclerosing agent. Simple aspiration has a high rate of failure due to fluid reaccumulation because the cysts are lined by secretory epithelium [8]. For a lasting benefit, a sclerosing agent is injected after cyst aspiration. Percutaneous sclerotherapy is a valid approach because it is safe, easy, relatively nontraumatic, and low in cost [36–37].

Percutaneous aspiration has been increasingly reported in recent years. Simple drainage without sclerotherapy is associated with a recurrence rate of 30–80% because the cysts are lined by secretory epithelium and fluid can reaccumulate [10]. Hanna and Dahniya [8] reported a recurrence rate of 80% in cysts treated with aspiration only and 32% in cysts after a single sclerosing agent injection. To improve the efficacy, various sclerosants have been used to provoke inflammation and adhesion of the cyst wall.

However, Seo et al. [38] reported that recurrence was reported in more than 30% of the cases, and modifications of the technique, e.g., by using the sclerosing agent in

excess of the standard volume (up to 40% or 50% of the aspirated volume) or performing repeated sessions of the procedure, were needed to increase the efficacy.

Chung et al. [4] reported an overall success rate of 57% in patients who underwent single-session sclerotherapy and of 95% in those who received two or three injections with a 12-hr interval for each session. Delakas et al. [36] also performed two repeated ethanol injections with a 24-hr interval and reported complete regression of the renal cysts in 83.8% and partial regression in 11.8%.

Dominicis et al. [31] performed a single-session technique. They reported cysts in 29 (76%) of 38 patients had complete regression.

ZHONG Wei-feng et al reported that Full recovery was achieved in 25 cases and improvement in 2 cases. Recurrence was found in 1 case after the treatment.

We used 2% iodophor for sclerotherapy, with single injection. There was complete resolution of 30 (75%) cysts. Similar results were reported (71–97%) by other authors who used single or multiple injections with or without 24-hour continuous cyst drainage before or after ablation [8,4].

Conclusions

ultrasound-guided aspiration and sclerotherapy with 2% iodophor is safe, minimally invasive, and highly effective for treatment of symptomatic renal cysts.

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