

# Tetracycline Hydrochloride :

1

.

Tetracycline

: 1996 4 1999 10  
22 23 . 23 16 , 4 ,  
2 , 1 , 21 - gauge Chiba  
Tetracycline 1500 mg 5 ml  
50 ml 3 ml, 50 ml 5 ml .  
23 18 가 3 - 22  
: 18 6 (33.3%) 10% , 7  
(38.9%) 50% , 50% 가  
5 (27.8%) . 5 1 12 50%  
가 , 1 50% 6 .  
6 18 13 (72.2%) ,  
83.3%(10/12), 33.3%(1/3), 100%(2/2) .  
63.6%(14/22) , 가  
22.7%(5/22)가 , 가 1 .  
가 24 .  
: Tetracycline  
가 가 .

, , ,

가

가

가 가 가 , 1996 4 1999 10 ,  
22 23  
가 , 41 85 ( ,  
(1 - 3). 가 56 ) , 7 15 가  
(4, 5). Tetracycline  
Hydrochloride (Minocycline Hydrochloride)  
Robinson (6) .  
16 가 , 4  
, 2 , 1 ,  
(7 - 9). 가

Tetracycline Hydrochloride

ride

2  
3.5 cm 15.5 cm  
7.5 cm , 50 - 1200 ml

1

2000 6 26

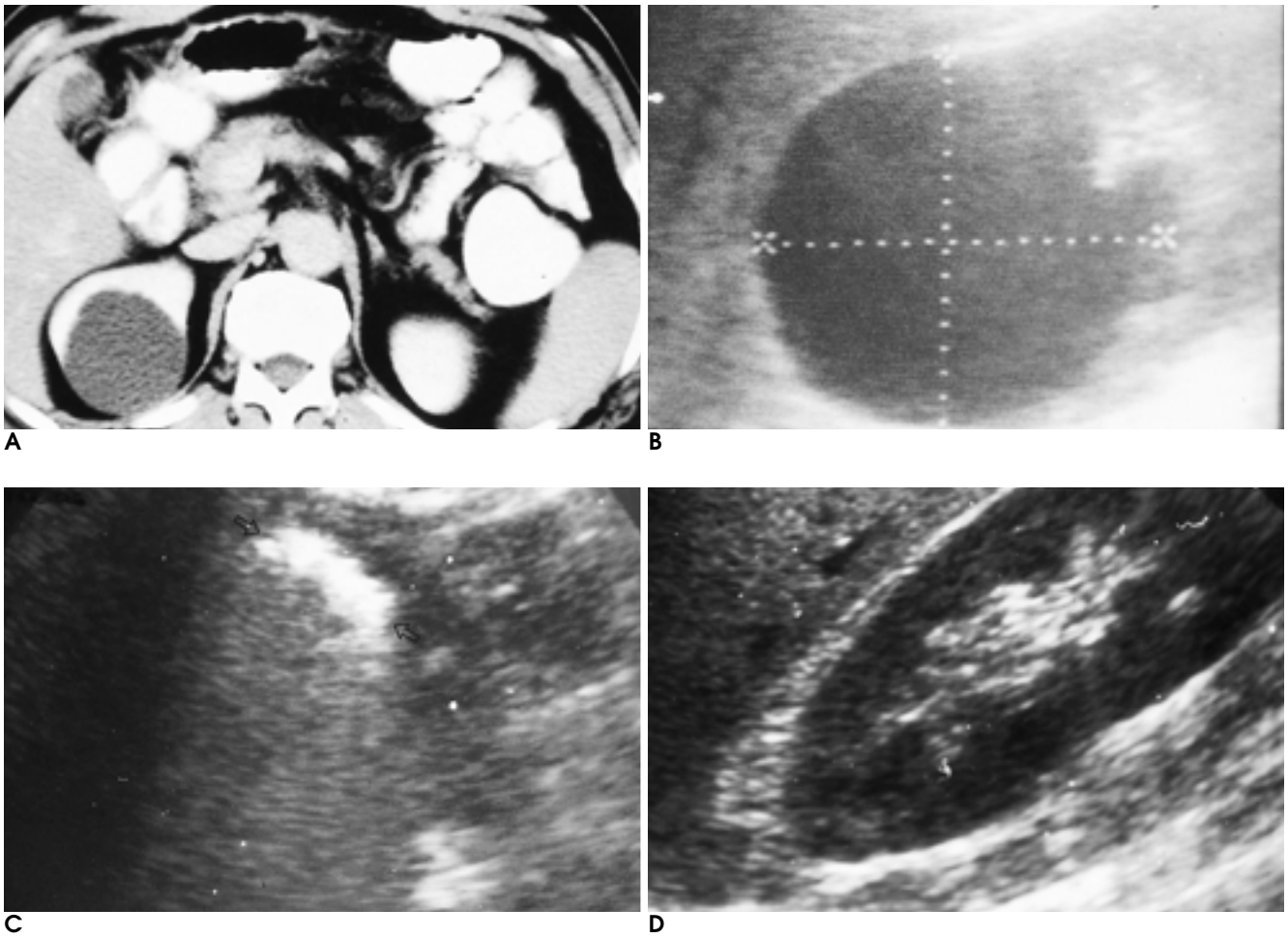
2000 9 7

: Tetracycline Hydrochloride

2	Hewlett Packard	Image Point real time	12	10 (83.3%) (Fig. 1),	3
, 3.5MHz	21 - gauge Chiba	50%	1 (33.3%),	2 (100%)	
		가 50%	가	(Fig. 2).	5
		1	12	, 1	6
		가 50%		(Fig. 3),	2
		, 2%	1		
	20 ml		14 (63.6%)		
			5 (22.7%)가		24
Tetracycline Hydrochloride(	Tetra -	가		Tetracyc -	
cycline) 1500 mg 0.9%	5 ml	line	4		
50 ml	3 ml, 50 ml	5		가	
ml			24		
	가		( )	10	
( )	10	가(10000/mm <sup>3</sup> )		가	1 - 2
		3			
$d^3/6$ ( $d=$ )	(l), (w), (d)				
(d)	$[d=(l \times w \times d)^{1/3}]$				
	(10).				
22 23 18		가			
(Table), 18 3					
13 , 6 5 , 12 2 , 22					
1					
Tetracycline					
10%	가				
(complete regression), 10 - 50%	가				
(partial regression), 50%	(no				
regression)					
Tetracycline	18 6				
(33.3%)	가 10%				
, 7 (38.9%) 50%					
, 50%					
5 (27.8%) 6	18 13				
(72.2%)	( )				

**Table.** Summary of 18 Patients with Follow-up

Sex/ Age(y)	Location/ No. of Cysts	Diameter of Cyst(mm)	Outcome
F/66	Kidney/1	71	Complete regression, asymptomatic
M/57	Kidney/1	105	Complete regression, mild pain
F/62	Kidney/1	75	Complete regression, mild pain
M/56	Kidney/2	60	Complete regression, asymptomatic
M/56	Kidney/1	50	Complete regression, asymptomatic
F/48	Kidney/1	72	Partial regression, vomiting
F/48	Kidney/1	51	Partial regression, transient fever
F/42	Kidney/1	83	Partial regression, mild pain
F/58	Kidney/1	115	Partial regression, mild pain
F/55	Kidney/2	60	Partial regression, asymptomatic
F/58	Kidney/1	65	No response, mild pain
M/56	Parapelvic/1	95	No response, severe pain
F/51	Liver/1	50	Partial regression, mild pain
M/85	Liver/multiple	80	No response, asymptomatic
F/69	Liver/multiple	95	No response, mild pain
F/53	Ovary/1	90	Partial regression, asymptomatic
F/41	Ovary/1	155	Partial regression, mild pain
M/42	Perivesical/1	35	No response, asymptomatic

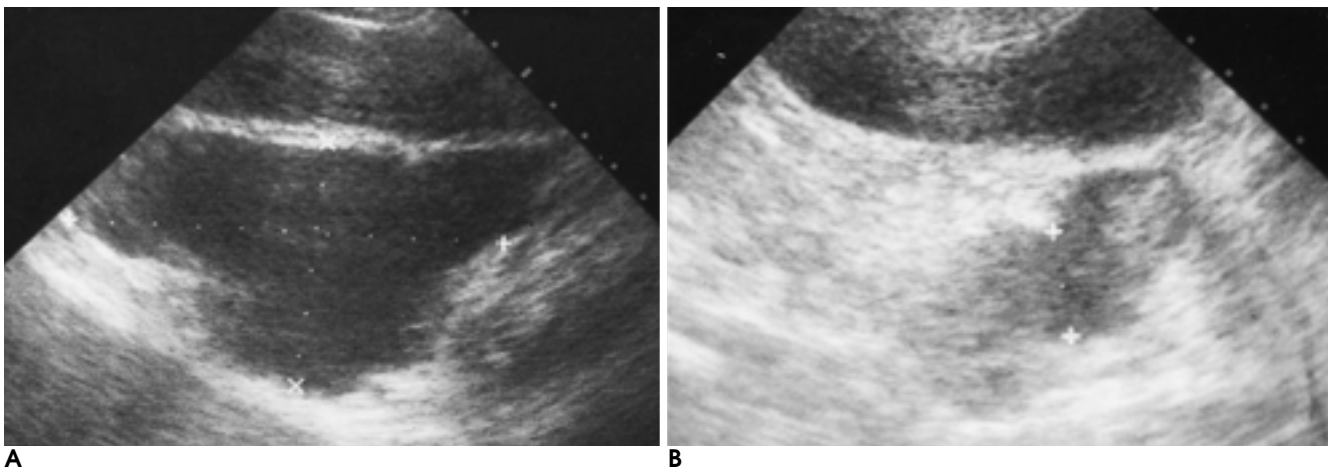


**Fig. 1.** A case of 59-year-old female patient with right renal cyst.

**A, B.** Contrast enhanced CT scan and sonogram shows a huge cyst in upper pole of right kidney.

**C.** Sonogram after injection of tetracycline within cyst shows posterior enhancement of tetracycline (arrows).

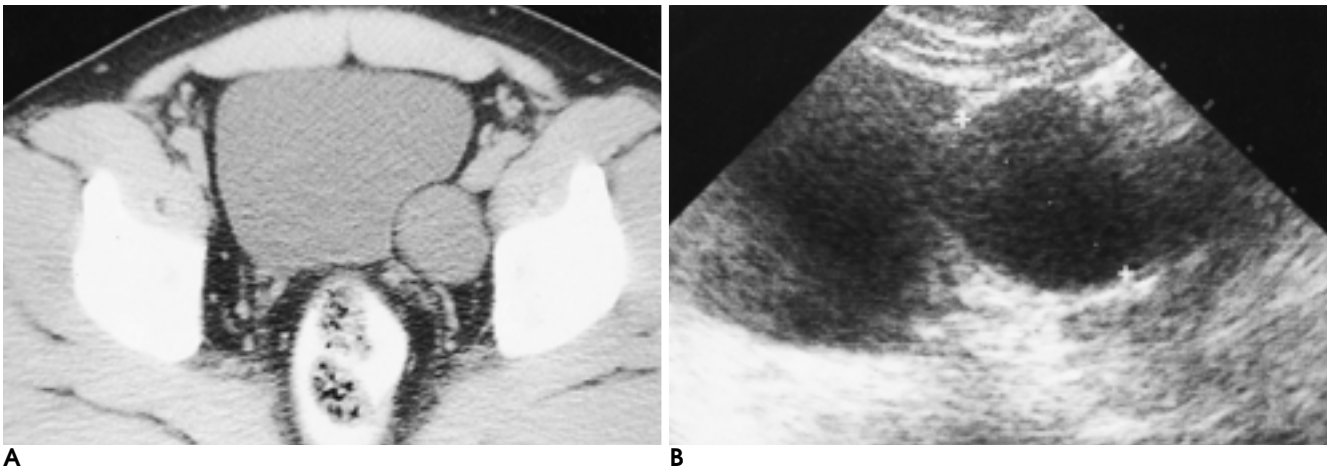
**D.** Follow-up sonogram after 6 months shows no recurrence and no evidence of scar change or cortical thinning.



**Fig. 2.** A case of 41-year-old female patient with ovarian cyst which was previous TAH with RSO state.

**A.** Sonogram before procedure shows huge lobulated cyst retrovesical area.

**B.** Follow-up sonogram after 3 months shows partial regression of cyst.



**Fig. 3.** A case of 42-year-old male with perivesical cyst.  
**A, B.** Noncontrast CT and sonogram shows about 3.5 cm sized left pelvic cyst. Follow-up sonogram(not shown) after 3 months was recurrent and was operated at the 6 months after procedure.

Tetracycline 86% Minocycline Hydrochloride (7) (83.3%)  
 Ethanol 90% Tetracycline (4)  
 Tetracycline 가 3  
 1 50% 50% Cellier (8)  
 2 가 2 가  
 가 alcohol Bret (5)  
 7 4 가 2  
 2 가 가  
 50% 가  
 1 가  
 Tetracycline Robinson (6)  
 (11). Tetracycline (7-9). Bodker (12)  
 pH 2.0 - 3.5 pH  
 Tetracycline 가  
 가 가  
 (13). 가  
 가(10000/ $\mu$ ) 1-2 가  
 3 가가

## Tetracycline

가

가

1. Raskin MM, Poole DO, B.Sc., et al. Percutaneous management of renal cysts: results of a four-year study. *Radiology* 1975;115:551-553
2. Roemer CE, Ferrucci JT Jr, Mueller PR, Simeone JF, vanSonnenberg E, Wittenberg J. Hepatic cyst: diagnosis and therapy by sonographic needle aspiration. *AJR Am J Roentgenol* 1981;136:1065-1070
3. Troiano RN, Taylor K. Sonographically guided therapeutic aspiration of benign-appearing ovary cysts and endometriomas. *AJR Am J Roentgenol* 1998;171:1601-1605
4. : 1994;30:253-258
5. Bret PM, Artri M, Guib L, Gillet P, Seymour R, Senterman MK. Ovarian cysts in postmenopausal women: preliminary results with transvaginal alcohol sclerosis. *Radiology* 1992;184:661-663
6. Robinson RM, Bolooki H. Intrapleural tetracycline for control of malignant pleural effusion: a preliminary report. *South Med J* 1972;

65:847

7. , , , . Minocycline Hydrochloride 1994;31:351-354
8. Cellier C, Cuenod CA, Deslandes P, et al. Symptomatic Hepatic Cysts: treatment with single-shot injection of minocycline hydrochloride. *Radiology* 1998;206:205-209
9. Hagiwara H, Kasahara A, Hayashi N, et al. Successful treatment of a hepatic cyst by one shot instillation of minocycline chloride. *Gastroenterology* 1992;103:675-677
10. Pederson JF, Emamian SA, Nielsen MB. Simple renal cyst: relations to age and arterial blood pressure. *BJR* 1993;66:581-584
11. Mindell HJ. On the use of pantopaque in renal cysts. *Radiology* 1976;119:747-748
12. Bodker A, Snner W, Anderson JT, Kristensen JK. Treatment of hydrocele of the testis with aspiration and infection of the tetracycline. *Br J Urol* 1985;57:192-193
13. Bean WJ, Renal cysts. Treatment with alcohol. *Radiology* 1981;138:329-331
14. Hu, K. N., Khan, G. S. and Gonder, M. Sclerotherapy with tetracycline solution for hydrocele. *Urology* 1984;24:572
15. Lang EK. Renal cyst puncture and aspiration: a survey of complications. *AJR Am J Roentgenol* 1977;128:723-727

## **Tetracycline Hydrochloride Sclerotherapy : Renal, Hepatic, Ovarian, and Perivesical cysts<sup>1</sup>**

Ju Ho Kim, M.D., Jae Bum Yang, M.D., Jae Chul Gong, M.D., Hye Soo Kwon, M.D.

*<sup>1</sup>Department of Diagnostic Radiology, Incheon Christian Hospital*

**Purpose:** To assess the efficacy and resulting complications of tetracycline sclerotherapy in renal, hepatic, ovarian, and perivesical cysts.

**Materials and Methods:** We retrospectively reviewed 23 cases of benign cysts (16 renal, 4 hepatic, 2 ovarian, and 1 perivesical) in 22 patients in whom the condition was diagnosed or confirmed by either ultrasound, CT, or cytology, and who underwent percutaneous tetracycline sclerotherapy. Using a 21-gauge Chiba needle, the target cyst was punctured under ultrasound guidance. Prior to the injection of 1500 mg of tetracycline diluted in 5 ml of normal saline, almost all the cystic content was aspirated, and at the end of the procedure the tetracycline was left in the cyst. During a period of between 3 and 22 months, 18 of the 23 cases were followed up.

**Results:** In six of the 18 cases followed up, the cysts either decreased in size by 10%, or collapsed completely. In seven cases a collapse of over 50% was noted, and in the remaining five the cyst recurred. In one of these, complete collapse occurred after retreatment at ten months, and the patient with a perivesical cyst underwent surgery six months after recurrence. Thus, treatment was effective (a collapse of at least 50%) in 13 of 18 cases (72.2%). This total of 13 comprised ten of 12 renal cysts (83.3%), two of two ovarian (100%), and one of three hepatic (33.3%). Percutaneous therapy was unsuccessful in five cases (two hepatic cysts, one renal, one parapelvic and one perivesical). Complications occurring during the procedure or follow-up period included discomfort or mild pain, vomiting, and transient fever, though these subsided within 24 hours. In one patient with severe pain, this subsided after four days.

**Conclusion:** As single-shot injection of tetracycline provides safe and effective treatment for renal and ovarian cysts, but for hepatic cysts is unsuccessful.

**Index words :** Cyst, percutaneous drainage  
Interventional procedure  
Kidney, cysts  
Liver, cysts  
Ovary, cysts

Address reprint requests to : Ju Ho Kim, M.D., Department of Diagnostic Radiology, Incheon Christian Hospital,  
237, Yul Mok Dong, Joong Ku, Incheon 400-130, Korea.  
Tel. 82-32- 762-7831, Fax. 82-32-763-9409