

# A DESCRIPTIVE STUDY OF 36 CASES OF SOLITARY SOFT TISSUE CYSTICERCOSIS AT RAMATHIBODI HOSPITAL FROM SURGICAL SPECIMENS DURING 1990-2006

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**Abstract.** We present a study of 36 cases of solitary soft tissue cysticercosis retrieved from pathological reports and medical records during 1990-2006. The soft tissue was the most common organ affected by cysticercosis in our study accounting for 75% of all affected cases. The brain was the second most common, and accounted for 15%. The most common location for the soft tissue lesions was upper extremities which accounted for 33% of cases, and the least common sites were the back, eyelid, buttock and cheek, which accounted for 3% each. Preoperative diagnoses of the lesions were as follows: lipoma, masses of undetermined nature, cysts, abscesses, fat necrosis and lymphadenitis. The mean size of lesions was 1.5 cm; the minimum and maximum sizes were 0.3 and 3 cm, respectively. The mean age of the patients was 33.5 years and the range was 9 to 68 years. The ratio of males to females was 1 to 5, which may reflect differences in eating habits and social life between males and females in our society. Our findings indicated that none of the cases in our study were diagnosed as cysticercosis preoperatively. Therefore, clinicians should include cysticercosis in the differential diagnosis of soft tissue cystic nodules or masses. Data regarding the sizes of lesions should be helpful in differentiating this entity from other soft tissue lesions in clinical practice and on magnetic resonance imaging.

## INTRODUCTION

Cysticercosis is an endemic disease in developing countries and has increased in western countries due to the influx of immigrants from endemic areas (Aghakhani *et al*, 1988; Hoberg, 2002). Cysticercosis can affect various organs including the brain, spinal cord, soft tissue, and heart. The clinical manifestations of patients vary depending on the site of larval encystment (Neafie *et al*, 2000; McAdam *et al*, 2005). The most worrisome symptoms are neurological due to involvement of the brain and spinal cord. Most cases with

soft tissue involvement present with multiple cystic lesions and involvement of the central nervous system (Kung *et al*, 1989; Kazanjian *et al*, 1994). Cases that present with solitary lesions are rare and often cause difficulty in differentiating from other soft tissue lesions especially neoplasms (Jankharia *et al*, 2005). This study aimed at providing descriptive data of solitary soft tissue cysticercosis regarding age, sex, site and size of lesions to help exclude this entity from other lesions clinically and on magnetic resonance imaging.

## MATERIALS AND METHOD

For descriptive study, cases of cysticercosis were retrieved from surgical pathology specimens submitted to the Department of Pathology, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand during January

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1990-April 2006. The medical records and surgical pathology reports of all cases were reviewed regarding organ involvement. Cases with solitary soft tissue lesions were selected for study the descriptive data, including location and size of lesions.

RESULTS

Of 260,569 surgical pathology specimens submitted to the Department of Pathology, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand during January 1990-April 2006, 48 cases of cysticercosis were found, accounting for 0.01% of our surgical pathology specimens. The most common organ affected by cysticercosis was soft tissue, which accounted for 75% of affected cases. The second most common organ involved was the brain, which accounted for 15% of cases. The most common location for soft tissue lesions was upper extremities, which accounted for 33% of cases. The second most common location was the lower extremities, which accounted for 19% of cases (Tables 1 and 2). The mean size of the lesions was 1.53 cm; the maximum and minimum were 3 cm and 0.3 cm, respectively (Table 3). The lesions were found in 30 females and 6 males. The mean age of patients was 33.5 years; the minimum and maximum ages were 9 and 68 years, respectively (Table 4). There were 24 cases for which the preoperative diagnosis of the lesions was revealed: lipoma, inclusion cyst,

Table 1  
Organ involvement of cysticercosis (48 cases).

	No. of cases	%
Soft tissue	36	75.0
Brain	7	14.6
Eye	3	6.3
Liver	1	2.0
Lymph node	1	2.0

Table 2  
Location of soft tissue lesions (36 cases).

	No. of cases	%
Upper extremities	12	33.3
Lower extremities	7	19.4
Neck	5	13.9
Abdominal wall	3	8.3
Lip	2	5.6
Breast	2	5.6
Back	1	2.8
Eyelid	1	2.8
Buttock	1	2.8
Cheek	1	2.8
Unknown	1	2.8

Table 3  
Sizes of lesions in soft tissue (36 cases).

Size (cm)	No. of cases	%
< 0.6	3	8.3
0.6-1	12	33.3
1.1-1.5	5	13.9
1.6-2.0	8	22.2
2.1-2.5	5	13.9
2.6-3.0	3	8.3
> 3.0	0	0

Mean = 1.53 cm, std deviation = 0.76 cm, max = 3 cm, min = 0.30 cm.

Table 4  
Ages of patients with soft tissue lesions (36 cases).

Age (years)	No. of cases	%
<10	1	2.7
10-20	2	5.4
21-30	12	32.4
31-40	13	35.1
41-50	6	16.2
51-60	2	3.4
71-80	0	0

Mean = 33.45 years, std deviation = 11.56 years, max = 68 years, min = 9 years.

Table 5  
Preoperative diagnosis of lesions.

Diagnosis	No. of cases
Lipoma	3
Mass, undetermined nature	12
Inclusion cyst	4
Abscess	1
Ganglion	1
Lymphadenitis	2
Fat necrosis	1
Not mentioned	12

underdetermined mass, abscess, ganglion, lymphadenitis and fat necrosis (Table 5).

## DISCUSSION

Human cysticercosis is caused by infestation with encysted larvae of the tapeworm *Taenia solium*, which results from either ingestion of food or water contaminated with viable eggs of *T. solium* or regurgitation of proglottids of the adult worm from the intestine into the stomach during the episodes of violent vomiting (Gutierrez, 1990). Cysticercosis can affect various organs including the brain, spinal cord, soft tissue, and heart. Our study focused on solitary soft tissue cysticercus lesions, because they are often confused with other soft tissue lesions in clinical practice, such as lipomas, neuromas, neurofibromas, sarcomas, myxomas or even tuberculous lymphadenitis (Jankharia *et al*, 2005). The term "soft tissue" generally refers to non-epithelial extraskelatal tissue of the body, exclusive of the reticuloendothelial system, glia and supporting tissue, such as voluntary muscles, fat fibrous tissue, vessels and the peripheral nervous system (Weiss and Goldblum, 2001). The mean size of the lesions located in the soft tissue in our study was 1.5 cm, and the largest size was 3 cm. The most common location for soft tissue lesions in our study was the upper extremities, accounting for 30% of

cases. The second and third most common sites were the lower extremities and neck accounting for 19% and 14%, respectively. The least common sites were the back, eyelids, and cheek, which accounted for only 3% each. The data indicate that soft tissue lesions caused by cysticercosis are widely distributed throughout the body, especially the extremities (Table 2). The preoperative diagnosis did not include cysticercosis entirely (Table 5). It is therefore important to include cysticercosis in the differential diagnosis of soft tissue masses, especially in this geographic regions where this infection is common. The sizes of lesions in our study were between 0.3 cm and 3 cm. This may imply in clinical practice that cysticercosis is less likely if the nodules are smaller than 0.3 cm or larger than 3 cm. Such information also helps to differentiate cysticercosis from other species of tape-worm on magnetic resonance imaging (Comert *et al*, 2000). It is important to emphasize that these sizes of the lesions should be applied only to soft tissue and not the central nervous system, where the sizes of the lesions may be larger (Berman *et al*, 1981). The most common age range of affected patients was between 21 and 50 years, which is similar to a previous report (Hoberg, 2002). It is interesting to note that the ratio of males to females in our study was 1 to 5, which is quite different from the findings of other studies. Chi and Chi (1978) and Amatya and Kimula (1999) found no sex predilection in studies from South Korea and Nepal, respectively. This discrepancy in sex predilection may reflect differences in eating habits and life-styles of the males and females in our study which may differ from other societies.

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