

A PRELIMINARY SURVEY FOR PARAGONIMIASIS INVOLVING PELVIC ORGANS IN ENDEMIC AREA, HSINCHU HSIEN, TAIWAN

by

YUNG-SHENG CHENG and CHIEN-TIEN HSU

from

Department of Obstetrics and Gynecology, Taipei Medical College

A preliminary survey was carried out in an attempt to find out the incidence of pelvic involvement of paragonimiasis and the possible sequelae. The trial to correlate the positive cutaneous reaction with pelvic findings failed to produce any positive results. However, owing to the inherent difficulty of precise evaluation with only rough pelvic examination without following laparotomy and pathology, definite conclusions should be reserved at this stage.

Paragonimiasis involving female genital organs was first described by Hsu *et al*⁽²⁾ in 1959. Since then, only 6 cases have been reported in the literature⁽¹⁻⁸⁾. (Table 1) From these clinical experiences, some questions arise; Is such pelvic paragonimiasis frequently seen in the endemic area? Is pelvic paragonimiasis responsible for gynecological ailments which bring the patients to

us? Obviously, a parasitological survey, coupled with gynecological examination in endemic areas is mandatory. Therefore, the aim of the present research has been, (a) a survey of incidence of pelvic paragonimiasis among general paragonimiasis women, (b) an evaluation of effects of paragonimiasis on female genital organs and the clinical significance.

Table 1 Cases of Pelvic Paragonimiasis reported by Hsu *et al*.

Cases	Diagnosis	Organs involved
1	Cervical cancer (1959)	Uterus, Omentum
2	Sterility, tuboovarian abscess (1959)	tubo-ovarian abscess
3	Sterility, tuboovarian cyst (1962)	Cyst wall
4	Habitual abortion, tuboovarian cyst (1967)	Cyst wall
5	Ectopic gestation (1968)	Uterus, Omentum
6	Sterility, endometriosis, Myoma(1968)	Omentum

SUBJECTS

Females in reproductive age, living at endemic areas of Taiwan form the subject of the present survey. A total of 301 women living at Naro, Mehoman, Kalabai and Sinlok

villages of Hsinchu Hsien were examined. Most of them are mountaineers.

METHOD OF SURVEY

1. Screening of women with paragonimiasis: (a) Intradermal reaction with V. B.

S. antigen was done first, followed by (b) sputum examination and (c) stool examination. Details of method are summarized in Table 2.

Table 2 Method for detection of Paragonimiasis

1 Skin test with V. B. S. antigen (Yokogawa)	
Make an intradermal injection of V. B. S. antigen to make a papule of 3 or 4 mm in diameter	
Measure the length and breadth of the papule immediately and 15 min. after the injection, respectively.	
Record the degrees of swelling	
positive reaction	5 mm
doubtful	4
negative	3
2 Sputum examination	
Add 3 to 5 parts of 3% NaOH sol. to 1 part of Specimen. Centrifuge with 2,000 r/m. for 3 min. Microscopic examination of the ppt.	
3 Stool examination	
Antiformin- Ether method	

2. Gynecological examination: (a) Obstetrical history, including gravidity, parity, incidence of sterility and number of abortions, of each subject were investigated. (b) Gynecological history, including gynecological complaints, menstrual history, and pelvic surgery in the past, of each subject were recorded. Women who show positive intradermal reaction or have parasitic ova in sputum or stool are eligible for a thorough gynecological evaluation including (c) pelvic examination, (d) roentgenological study, (e) surgery, if indicated, and (f) pathological study of surgical specimen.

RESULTS

1. Intradermal reaction: Of 301 women, 26 or 8.63% had positive reaction and 31 or 10.3% had doubtful reaction. As shown in Table 3, distribution of positive women was different according to villages; it was high in Naro and Kalabai while it is lower in Mehoman and Sinlok. The figures are much lower than that of Kinugasa⁽⁴⁾, and are

Table 3 Results of Skin Test with V. B. S. antigen

Village	No. of subjects	Positive reaction		Doubtful reaction		Total %	Kinugasa 1943 %
		No.	%	No.	%		
Naro	125	21	16.8	18	14.5	31.3	25
Mehoman	40	1	2.5	3	7.5	10.0	16
Kalabai	42	3	7.1	3	7.1	14.2	15
Sin-lok	94	1	1.06	7	7.4	8.46	
Total	301	26	8.63	31	10.3	18.93	

rather close to those of Watten, Kunts and Liu⁽⁶⁾.

2. Sputum and stool examination: A total number of 287 of sputa were examined, but no parasitic ova were found in any of them. Similarly, paragonimus ova were found in none of the 292 specimens of stool, though many other parasitic ova were found. See Table 4 and 5.

Table 4 Result of Sputum examination

Skin test	Number of specimens	Parasite ovum
Positive	26	0
	15 (repeat ex.)	0
Doubtful	26	0
	8 (repeat ex.)	0
Negative	212	0

Table 5. Result of Stool examination

Skin test	Number of specimens	Parasite ovum					
		Absent	Pw	Al	Tt	Ts	Ad
Positive	25	6	0	16	3	2	1
	14 (repeat)	1	0	12	3	4	0
Doubtful	26	8	0	16	2	2	1
	8 (repeat)	3	0	4	0	0	1
Negative	219	32	0	171	34	11	14

Pw: *Paragonimus westermanii*Ts: *Taenia solium*Al: *Ascaris lumbricoides*Ad: *Ancylostoma duodenale*Tt: *Trichocephalus trichiurus*

3. Age distribution: As illustrated in Figure 1 and Table 6, there was no difference in age distribution of subjects according to intradermal reaction. Therefore, three groups of women are eligible for a comparison with regard to gravidity, parity, and menstrual etc.

4. Gravidity: No remarkable difference was noted among the three groups, as illustrated in Figure 2 and Table 7. It seems

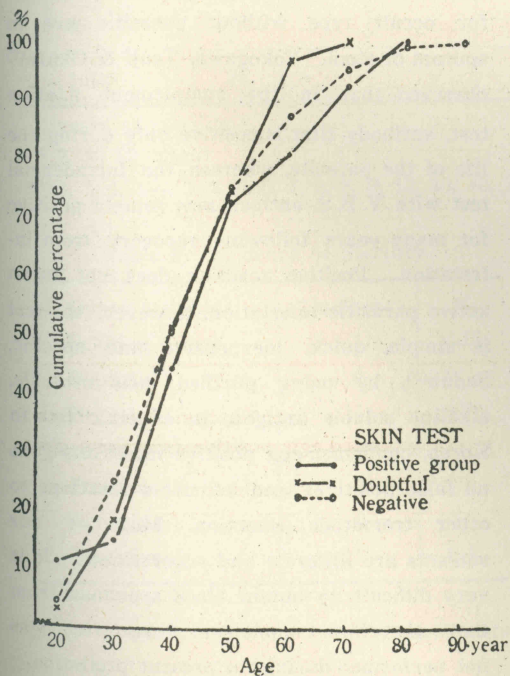


Fig 1 Age Distribution

that paragonimiasis little affect the fertility of patients.

Table 6 Age Distribution

Age	Skin test		
	positive	doubtful	negative
-19	3	1	10
20-29	1	5	51
30-39	7	10	61
40-49	8	7	58
50-59	2	7	32
60-69	3	1	19
70-79	2	0	8
80-	0	0	2
(no record)			3
Total	26	31	243

Age distribution
(in cumulative number and percentage)

Age	Skin test					
	Positive %		doubtful %		negative %	
-19	3	11.5	1	3.2	10	4.1
20-29	4	15.3	6	16.3	61	25.3
30-39	11	42.3	16	51.6	122	50.6
40-49	19	72.7	23	74.1	180	74.7
50-59	21	80.8	30	96.7	212	87.9
60-69	24	92.3	31	100	231	95.8
70-79	26	100			239	99.5
80-					241	100

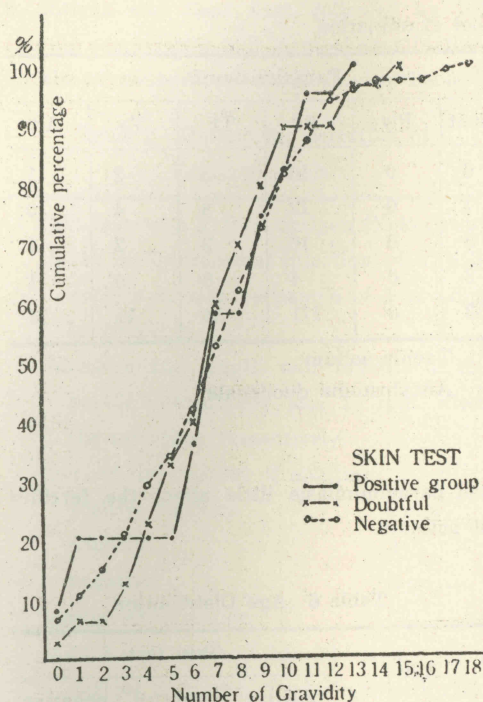


Fig. 2 Gravidity Distribution

5. Sterility: There was no difference in incidence of sterility, both primary and secondary. See Table 8. The only one positive woman, aged 45, has been sterile for 30 years. She complains of abdominal pain, increased vaginal discharge, dysmenorrhea and menstrual aberration; however, no pathological findings were noted by pelvic examination. Our offer of further detailed examination in Taipei was refused.

6. Parity: No difference was noted. See Table 9 and Figure 3.

7. Abortion: Spontaneous abortion occurred in 10 of 26 positive women, 20 of 31 doubtful women and 122 of 244 negative women, as shown in Table 10. Statistically, there is no difference.

8. Gynecological complaints: The incidence of various gynecological complaints is tabulated in Table 11. No remarkable difference was noted, nor in the menstrual condition.

9. Pelvic surgery in the past: Shown in Table 12.

10. Pelvic examination: Of 26 positive women, 17 or 65.4% had pelvic examination. One cervicitis and one possibly cervical cancer were found; the former is a 41 year old housewife, gravida 11, para 9, complaining of lower abdominal pain; the latter is a 70 year-old menopausal woman, gravida 11, para 9, complaining of vaginal spottings. The cervix is markedly eroded with contact bleeding. No further examination.

Of 31 doubtful women, only 9 or 29% had pelvic examination. One leukoplakia vulvae with rectocele and 2 cervicitis were found. The woman with leukoplakia is a 45 year old housewife, gravida 7, para 6, complaining of abdominal pain, diarrhea, and menometrorrhagia.

COMMENT

Intradermal reaction with V. B. S. antigen is the best screening method for the detection of paragonimiasis, and is particularly valuable for occult type without parasitic ova in sputum or stool. Yokogawa, Tsuji & Okura⁽⁷⁾ observed that in the complement fixation test, antibody titer is positive only during the life of the parasite, whereas the intradermal test with V. B. S. antigen may remain positive for many years following recovery from infestation. Positive reaction does not mean active parasitic infestation, however, the test is simple, quick, inexpensive and specific. Sadun⁽⁸⁾, by using purified acid-insoluble, alkaline soluble antigen, in endemic foci in Korea, confirmed egg positive infections gave no false positives and no cross reactions to other trematode infection. Most of our subjects are illiterate and superstitious. It is very difficult to obtain blood specimen from them, therefore, complement fixation test was not performed during the present preliminary survey. The 26 positives (8.63%) are rather

Table 7 Gravidity distribution

gravidia	No.	Skin test					No.	negative cumulative	
		positive cumulative		No.	doubtful cumulative			No.	%
		No.	%		No.	%			
0	2*	2	8.3	1	1	3.3	17**	17	7.26
1	3	5	20.8	1	2	6.6	9	26	11.1
2	0	5	20.8	0	2	6.6	11	37	15.8
3	0	5	20.8	2	4	13.2	13	50	21.3
4	0	5	0.82	3	7	23.3	20	70	29.9
5	0	5	20.8	3	10	33.3	11	81	34.2
6	4	9	37.5	2	12	40.0	18	99	42.3
7	5	14	58.3	6	18	60.0	26	125	53.4
8	0	14	58.3	3	21	70.0	21	146	62.4
9	4	18	75.0	3	24	80.0	26	172	73.5
10	2	20	83.3	3	27	90.0	21	193	82.5
11	3	23	95.8	0	27	90.0	15	208	88.8
12	0	23	95.8	0	27	90.0	14	222	94.8
13	1	24	100	2	29	96.6	4	226	96.5
14				0	29	96.6	2	228	97.4
15				1	30	100	1	292	97.8
16							0	229	97.8
17							4	233	99.5
18							1	234	100
no record	2			1			10		
total	26			31			244		

years of sterility

* 2, 30 (2 cases)

** 1, 1, 1, 1½, 3, 3, 6, 6, 7, 8, 8, 9, 13, 20, 40, ?, ? (17 cases)

Table 8 Incidence of Sterility

Primary sterility	Number	%
Positive group	1	4.15
Doubtful	0	0
Negative	11	4.7
Secondary sterility		
Positive group	0	0
Doubtful	0	0
Negative	1	0.4

close to 12.2% reported by Watten, Kunts and Liu.

With regard to obstetrical history and

gynecological history, no particular deviation was found in women with positive intradermal reactions. It seems that paragonimiasis little affect the reproductive function of women. However, our primary concern is an evaluation of the effect of pelvic paragonimiasis on female genital organs. Unfortunately, our attempts to detect cases with paragonimiasis involving female genital organs out of 57 subjects with positive and doubtful intradermal reactions have been unsuccessful. Hence, the final evaluation of the problem remains to be determined by further re-

Table 9 Parity distribution

Para	No.	Positive cumulative		No.	Doubtful cumulative		No.	Negative skin test cumulative	
		No.	%		No.	%		No.	%
0	3	3	12.5	1	1	3.3	17	17	7.3
1	2	5	20.8	1	2	6.6	12	29	12.5
2	0	5	20.8	0	2	6.6	16	45	19.4
3	0	5	20.8	6	8	26.6	12	57	24.5
4	1	6	25.0	2	10	33.3	21	78	33.6
5	1	7	29.1	3	13	43.3	17	98	40.9
6	3	10	41.6	4	17	56.6	30	125	53.8
7	6	16	66.6	6	23	76.6	33	158	68.1
8	2	18	75.0	2	25	83.9	18	176	75.8
9	4	22	91.6	2	27	90.0	19	195	84.0
10	2	24	100	1	28	3.39	21	216	93.1
11	0	24		0	28	93.3	6	222	95.6
12				1	29	96.6	7	229	98.7
13				1	30	100	3	232	100
no record	2			1			12		
total	26			31			244		

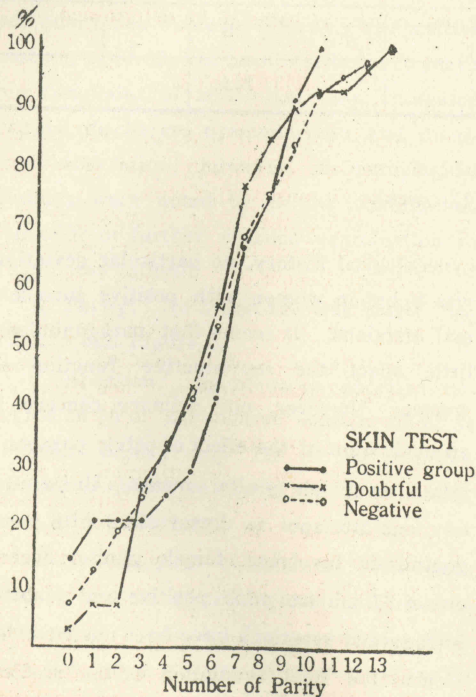


Fig. 3 Parity Distribution

Table 10 Incidence of Abortion

Number or abortions	Skin Test		
	Positive	Doubtful	Negative
1	3	13	66
2	6	3	33
3	1	3	12
5	0	1	4
4	0	0	3
6	0	0	2
7	0	0	2
total	10	20	122
%	38.4	64.5	50

($X^2=3.951, P=0.13$)

examination of these 57 women. A second survey, including roentgenological study, complement fixation test and complete gynecological study, is being planned by us.

Table 11 Gynecological Complaints

Complaint	Positive Gravity		Doubtful Gravity		Negative Gravity	
	No.	%	No.	%	No.	%
Leucorrhoea	11	42.3	18	58	142	58.2
Hypermenorrhoea	3	11.5	7	22.6	40	16.4
Hypomenorrhoea	6	23.0	4	12.9	51	20.9
Polymenorrhoea	0	0	0	0	11	4.5
Oligomenorrhoea	4	15.4	1	3.2	11	4.5
Dysmenorrhoea	10	38.4	15	43.4	96	39.3
Irregular menses	7	26.9	12	38.7	90	36.8

Table 12 Gynecological operations in past

Positive group	0
Doubtful	0
Negative	5
Hysterectomy	
myoma	1
unknown	1
Cesarean section	2
Ectopic gestation	1

Table 13 Result of Pelvic examination

Skin test	Subject		Results of examination
	No.	%	
Positive Gr. 26	17	65.4	1 cervicitis 1 cervical cancer? others, n. p.
Doubtful Gr. 31	9	29	1 leukoplakia of vulva with ectocoele 2 cervicitis others, n. p.

SUMMARY

A preliminary survey of incidence of pelvic paragonimiasis and its clinical significance in obstetrical and gynecological field was carried out among 301 married women, mainly mountain dwellers, residing in the endemic areas of Hsinchu Hsien. Of 301 subjects, 26 or 8.63% had positive intradermal

reaction with V. B. S. antigen, while 31 or 10.3% had doubtful reaction. These 57 women were subjected to gynecological evaluation, however, attempts to detect cases with paragonimiasis involving genital organs have been unsuccessful. It is clearly demonstrated that no significant difference did exist among women with positive intradermal reaction and other control women in regard to their fertility, parity, occurrence of abortion or menstrual aberrations, etc. Final evaluation of effect of pelvic paragonimiasis on female genital organs remains to be determined.

REFERENCE

- (1) CHENG, Y. S. & HSU, C. T.: Additional Three Cases of Paragonimiasis Involving Pelvic Organs. O. G. China
- (2) HSU, C. T., MA, Y. M. & WANG, T. T.: Paragonimiasis Involving Female Genital Organs, Report of two cases. *Obst. and Gynec.* 14: 461, 1959
- (3) HSU, C. T., MA, Y. M., WANG, T. T., HSIA, C. J., OULI, C. K. & CHANGCHIEH, B. C.: Paragonimiasis der Weiblichen Geschlechtsorgane, Bericht Dreier Falle: *J. F. M. A.* 61: 593, 1962
- (4) KINUGASA, M.: Investigation on incidence of lung fluke disease (*Paragonimus Westermanii*) in Sintiku Prefecture V. On its distribution and relation between the fluke and the vector, the fresh water crab. *J. M. A. T.* 42: 39, 1943
- (5) SADUN, E. H.: The Public Health Significance of Paragonimiasis in the Far East Abstr. 6th Internat'l Congress Trop.

- Med & Malasia, Lisbon 53-54, 1958
- (6) WATTEN, R. H., KUNTS, R. E. & LIU, H. Y.: Use of Purified Antigen for the Detection of Paragonimus Westermanii and Clonorchis Sinensis in Peoples of Hsinchu Hsien, Taiwan. J. F. M. A. 59: 364, 1960
- (7) YOKOGAWA, M., TSUJI, M & OKRA, T.: Studies on the Complement Fixation Test for Paragonimiasis as the Method of Criterion of Cure. Jap. J. Parasitol. 11: 117, 1962

臺灣省新竹縣尖石鄉地區的有關衛氏蛭蟲骨盆內寄生例之初步調查

鄭永盛 徐千田

臺北醫學院婦產科

爲了明瞭衛氏蛭蟲骨盆內寄生之頻度以及其對婦人生殖器影響，吾等在新竹縣尖石鄉，以已婚山地婦女 301 名爲對象，作一次初步調查衛氏蛭蟲寄生例之發現，以皮內反應最爲簡便，迅速而可靠。皮內反應陽性者爲 26 例 (8.63%)，偽陽性者爲 31 例 (10.3%)

。要從這些 57 例中找出骨盆內臟器寄生例之各種嘗試終歸失敗，但祇少吾人已知衛氏蛭蟲對婦女之生殖能力，妊娠或其他月經似乎無影響，至於骨盆內寄生例之意義，則尙待進一步之調查。