EPIDEMIOLOGICAL STUDY OF HISTOPLASMOSIS IN THAILAND

XXI. A Survey in Bangkok *

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Abstract. Prijyanonda, B., et al. : Epidemiological Study of Histoplasmosis in Thailand. XXI. A Survey in Bangkok. Siriraj Hosp. Gaz. 1970, 22 : 192–198.

A Survey carried out on 2,500 persons in Bangkok where a histoplasmosis case had been reported, showed 2.6 per cent of histoplasmin reactors, of whom chest radiography revealed 30.7 per cent positive findings. Soil study was negative.

A case of histoplasmosis was first reported in this country by Thep-husdin, et al.[1] in 1961. This report describes results of an epidemiological survey in connection with the above incident.

Materials and Methods

Included in this study were individuals aged 15 years and over, who had lived for 3 years or longer in Bangkok Province. A total of 2,500 persons (920 men and 1,580 women) was available for investigation. Most subjects were factory workers.

At the beginning, all subjects received two intracutaneous tests simultaneously: a 1 in 100 dilution of histoplasmin (Parke, Davis & Co., Detroit, Michigan; lot 984799C, expiration date – May 25, 1970) on the right forearm, and a 5 T.U. dose of Old Tuberculin (Swiss Serum and Vaccine Institute, Berne, Switzerland; control No. 34923, date of expiry–February 1973) on the left. The testing techniques were similar to those employed elsewhere.[2] The reaction was read about 72 hours later, and was classified as "positive" when the longest diameter of palpable induration was not less than 5 mm. All histoplasmin reactors were then requested to come for chest radiography. Soil samples were collected from or around the reactors' residences as well as from other places chosen at random, especially from around animals' pens. These samples were sent for mycological study, using the procedure described by Emmons[3] alternately with the one described in the previous report.[4]

Results

Histoplasmin Sensitivity : Shown in the Table 1 is the sex distribution of subjects in Bangkok Province according to skin reactivity. Results of testing are displayed in Table 2. The overall rate of histoplasmin reactors for Bangkok Province was 2.6 per cent (4.38 % for men and 1.70 % for women; $P < 0.001$). Statistical dif-

* Supported by a Research Grant from the National Research Council of Thailand.

Table 1: Sex Distribution of 2,162 Subjects in Bangkok Province According to

Induration	Dusit			Bangkhen			Bangna			Yannawa			Prakanong			Phyatai			Bangkapi			Patumwan			Pomprab		
in mm.	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
0 – 4	294	381	675	95	368	463	47	226	273	55	187	242	110	114	224	35	39	74	22	26	48	19	7	26	12	12	24
5 – 9	4	2	6	1	1	2	0	4*	4	0	1	1	4*	2	6	1	0	1	2	1	3	0	0	0	0	0	0
10 – 14	6	2	8	2	4	6	1	0	1	10	4	14	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
15 – 19	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 –	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	305	385	690	98	374	472	48	230	278	65	192	257	114	116	230	37	39	76	24	27	51	19	7	26	12	12	24

* One subject gave 5 mm. reaction.

Skin Reactivity.

Pranakorn			Sampanthawongse			Bangrag			Ladkrabang			Bangsue			Over all		
M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
15	6	21	8	5	13	9	6	15	2	2	4	2	1	3	725	1,380	2,105
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	11	23
0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	20	12	32
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	6	21	8	7	15	9	6	15	2	2	4	2	1	3	758	1,404	2,162

Table 2: Results of Histoplasmin Testing in 2,500 Persons.

Ampurs	No. of Persons Tested			No. of Persons Read	No. of Reactors
	Men	Women	Total		
Dusit	354	436	790	690 (87.3)	15 (2.1)
Bangkhen	141	449	590	472 (80)	9 (1.9)
Bangna	53	238	291	278 (95.5)	5 (1.7)
Yannawa	76	221	297	257 (86.5)	15 (5.8)
Prakanong	124	120	244	230 (94.2)	6 (2.6)
Phyatai	48	44	92	76 (82.6)	2 (2.63)
Bangkapi	26	27	53	51 (96.2)	3 (5.8)
Patumwan	21	8	29	26 (89.6)	0
Pomprab	31	14	45	24 (53.3)	0
Pranakorn	23	6	29	21 (72.4)	0
Sampanthawongse	8	8	16	15 (93.7)	2 (12)
Bangrag	9	6	15	15 (100)	0
Ladkrabang	4	2	6	4 (66.6)	0
Bangsue	2	1	3	3 (100)	0
Over all	920	1,580	2,500	2,162 (86.4)	57 (2.6)

Figures in parentheses represent percentage.

Table 3: Results of Tuberculin Testing in 2,162 Persons.

Ampurs	No. of Persons Read	No. of Reactors
Dusit	690	663 (96)
Bangkhen	472	441 (93.4)
Bangna	278	256 (92)
Yannawa	257	231 (89.8)
Prakanong	230	215 (93.4)
Phyatai	76	67 (88.1)
Bangkapi	51	45 (88.2)
Patumwan	26	25 (96.1)
Pomprab	24	23 (95.8)
Pranakorn	21	20 (95.2)
Sampanthawongse	15	15 (100)
Bangrag	15	15 (100)
Ladkrabang	4	4 (100)
Bangsue	3	1 (33.3)
Over all	2,162	2,021 (93.4)

Table 4: Histoplasmin – Tuberculin Concordance.

		Tuberculin		
		Pos.	Neg.	Total
Histoplasmin	Pos.	54	3	57
	Neg.	1,967	138	2,105
	Total	2,021	141	2,162

Table 5 : Number of Histoplasmin Reactors and Persons Radiographed.

Ampurs	No. of Reactors	No. of Persons Radiographed		
		Men	Women	Total
Dusit	15	12	2	14
Bangkhen	9	3	4	7
Bangna	5	1	3	4
Yannawa	15	10	4	14
Prakanong	6	4	2	6
Phyatai	2	2	0	2
Bangkapi	3	3	0	3
Patumwan	0	0	0	0
Pomprab	0	0	0	0
Pranakorn	0	0	0	0
Sampanthawongse	2	0	2	2
Bangrag	0	0	0	0
Ladkrabang	0	0	0	0
Bangsue	0	0	0	0
Total	57	35	17	52

Table 6 : Radiographical Findings in Histoplasmin Reactors.

Findings	No. of Cases								
	Dusit	Bangkhen	Bangna	Yannawa	Prakanong	Phyatai	Bangkapi	Sampanthawongse	Total
Negative	9	6	3	9	4	0	3	2	36
Positive	5	1	1	5	2	2	0	0	16
1. Calcified									
Lymph node									
Parenchymal	5	1	1	4	1	2			14
Both									
2. Fibrotic									
Parenchymal									
Pleural									
Both									
3. Infiltrative				1	1				2
4. Cavitary									
5. Mixed									
Calcified + Infiltrate									
Calcified + Fibrotic									
Infiltrate + Cavitary									
Over all	14	7	4	14	6	2	3	2	52

* Extent of lesions was minimal in all.

ferences were found between Ampur Dusit and Ampur Yannawa ($P < 0.01$), between Ampur Bangkhen and Ampur Yannawa ($P < 0.01$), and between Ampur Bangna and Ampur Yannawa ($P < 0.02$).

Tuberculin Sensitivity: The positive rates were shown in Table 3. The overall rate was 93.4 per cent. Table 4 shows comparison of histoplasmin – tuberculin concordance.

Radiographical Examination: Fifty – two histoplasmin reactors had their chests radiographed (Table 5), and 16 (30.76 %) showed positive findings (Table 6); of the latter 2 had probably significant lesions.

Soil Study: Mycological examination of 100 soil samples by the "Warcup – Soil Plate" technique, and of 44 soil samples by soil dilution method, mouse injection, and cultivation failed to reveal the presence of Histoplasma capsulatum.

Summary and Comment

During March – May 1969, histoplasmin testing was carried out on 2,500 persons in Bangkok Province, with the aim to locate a source of infection in connection with one known case.[1] The overall rate for Bangkok Province was 2.6 per cent (4.38 % for men, and 1.70 % for women; the difference being significant). The overall tuberculin sensitivity rate was 93.4 per cent. Among the 57 histoplasmin reactors, 3 were tuberculin negative. Chest radiography disclosed 30.7 per cent positive findings, and 2 out of 14 had probably significant lesions. Of the 16 x-ray positive cases, 2 were tuberculin – negative. Soil study was non-revealing.

The results of this survey when compared to those of the 1966 survey in medical students and student-nurses at the Siriraj Hospital[5] show unremarkable statistical difference: comparison of 4.38 per cent reactors in 758 men in this survey to 8.87 per cent reactors in 214 men in the 1966 survey gives the value of $P = 0.02$; and that of 1.70 per cent reactors from 1,404 women in the present survey to 3.18 per cent reactors from 283 women in the 1966 survey gives the value of $P > 0.1$.

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(เรื่องย่อจากภาษาอังกฤษข้างต้น)

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อนุสนธิจากที่มีรายงานผู้ป่วย ฮิสโตพลาสโมสิส หนึ่งรายในจังหวัดพระนคร คณะผู้รายงานจึงได้ไปทำการสำรวจเพื่อศึกษาระบาดวิทยาของโรคดังกล่าวเมื่อเดือนมีนาคม — พฤษภาคม พ.ศ. ๒๕๑๒. ผลการทดสอบผิวหนังในประชาชน ๒,๕๐๐ คน ปรากฏว่ามีผู้ให้ปฏิกิริยาฮิสโตพลาสมิน บวก ๒.๖ เปอร์เซนต์, อัตราบวกในชายสูงกว่าหญิงมีนัยสำคัญทางสถิติ. ในผู้ที่ให้ปฏิกิริยา ฮิสโตพลาสมิน บวก ๕๗ ราย, ๓ รายให้ปฏิกิริยาทูเบอร์คุลิน ลบ และ ๓๐.๗ เปอร์เซนต์มีสิ่งตรวจพบผิดปรกติในภาพรังสีทรวงอก (๒ รายจาก ๑๔ ราย มีรอยโรคลักษณะน่าจะมีความสำคัญ และ ๒ รายให้ปฏิกิริยาทูเบอร์คุลิน ลบ). การตรวจดินเพื่อแยกเชื้อราไม่พบ ฮิสโตพลาสมา แคปสุลาตุม. ผลการสำรวจคราวนี้บ่งชี้ว่า แหล่งของโรคนี้ไม่น่าจะมีอยู่ในจังหวัดพระนคร.

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