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I. S. Barsoum, et al

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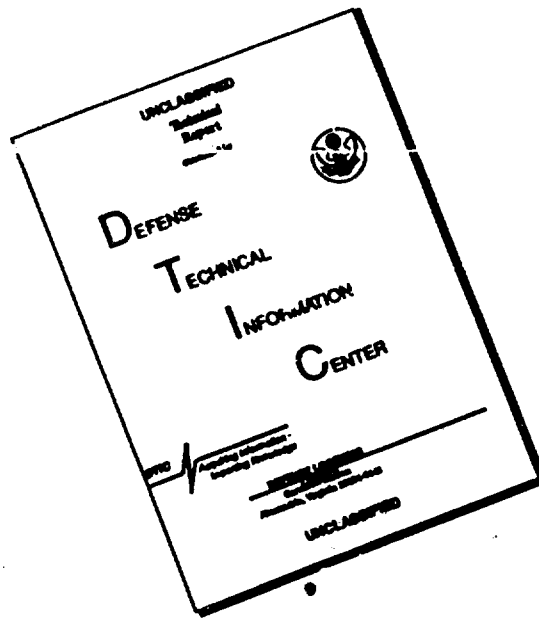
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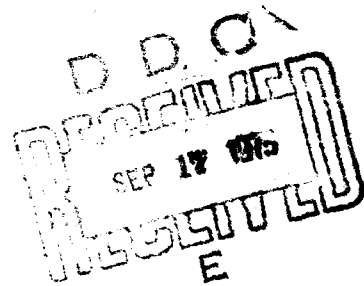
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By

I.S. Barsoum, R.W. Moch and Boulos A.M. Botros

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FPO NEW YORK 09527

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D		
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)		
1. ORIGINATING ACTIVITY (Corporate author) U.S. Naval Medical Research Unit No. 3 FPO New York 09527	2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
	2b. GROUP	
3. REPORT TITLE LEPTOSPIRAL AGGLUTINATING ANTIBODIES IN SERA OF PATIENTS WITH HEPATITIS IN CAIRO HOSPITALS (EGYPT)		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Technical/Scientific Report		
5. AUTHOR(s) (First name, middle initial, last name) I.S. Barsoum, R.W. Moch and Boulos A.M. Botros		
6. REPORT DATE 1972	7a. TOTAL NO. OF PAGES 6	7b. NO. OF REFS 11
8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER (S) NAMRU-3-TR.25-73	
b. PROJECT NO. MF12.524.009-3024B	9b. OTHER REPORT NO (S) (Any other numbers that may be assigned this report) Acc.857	
c.		
d.		
10. DISTRIBUTION STATEMENT Distribution of this report is unlimited		
11. SUPPLEMENTARY NOTES Printed in: J. Egypt. Publ. Hlth Ass. 47(2):114-120, 1972	12. SPONSORING MILITARY ACTIVITY Bureau of Medicine and Surgery Department of the Navy Washington, D.C. 20300 20342	
13. ABSTRACT <p>Four hundred-eighty sera from patients with hepatitis were tested for leptospiral agglutinins by Microscopic Agglutination (MA) test. Twenty-one sera (4.4%) were positive at a significant titer of 1:128 or greater. The most predominant reacting serotypes were <u>L. icterohemorrhagiae</u>, <u>L. canicola</u> and <u>L. grippityphosa</u>. The importance of considering leptospirosis among other infectious diseases in jaundiced patients is stressed.</p>		

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Security Classification

14	KEY WORDS	LINK A		LINK B		LINK C	
		ROLE	WT	ROLE	WT	ROLE	WT
	Leptospirosis Leptospira serotype Jaundice Serum hepatitis Australia antigen Human sera Egypt						

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Reprinted from:
THE JOURNAL OF THE EGYPTIAN PUBLIC HEALTH ASSOCIATION
VOL. XLVII, No. 2
1972

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LEPTOSPIRAL AGGLUTINATING ANTIBODIES
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* The opinions and assertions in this scientific report are those of the authors and do not necessarily reflect the official views of the Navy Department or the naval service at large. This research has been supported by the Bureau of Medicine and Surgery work unit no. MF12,524, 009,3024B

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One of the several diseases that may cause jaundice in humans is leptospirosis (Turner, 1969). In Egypt, jaundiced patients usually are checked for infectious and serum hepatitis but not for leptospirosis. In this study, the presence of leptospiral agglutinins in sera, from patients from six hospitals in Cairo in 1970 diagnosed as having clinical hepatitis is reported.

MATERIALS AND METHODS

Four-hundred-eighty sera from patients in Abbassia Fever Hospital, Embaba Fever Hospital, Mounira Hospital, Shoubra Hospital, Azhar and Agouza Hospitals were tested for leptospiral agglutinins by the Microscopic Agglutination (MA) test (Gochenour, *et. al.*, 1953). These sera were from jaundiced patients and were tested primarily for hepatitis-associated Australia antigen.

Sera were first screened at a final dilution of 1 : 128 against the following leptospira serotypes: *ballum*, *casicola*, *icterohemorrhagiae*, *bataviae*, *grippotyphosa*, *pyrogenes*, *autumnalis*, *pomona*, *wolffi*, *austriacis*, *hebdomadis*, *tarassovi*, *javanica*, *butebo*, *palce* and *andamana*. (These serotypes were originally supplied by the Pathological Department of the U. S. Naval Medical Research Unit No. 2, Taipei, Taiwan). Sera which agglutinated one or more leptospira serotypes were titrated against each agglutinating serotype. The procedure for this test has been described previously (Barsoum & Jamison, 1971).

RESULTS

Twenty-one (4.4%) of the 480 human sera tested showed leptospiral agglutinins at a titer of 1 : 128 or greater. This titer constitutes presumptive evidence of infection with the organism dating back from the preceding week to several years

(Alexander *et. al.*, 1970). MA test results for different hospital patient are given in Table 1. Patients from the Abbassia Fever Hospital showed the highest incidence of leptospiral seropositivity (10/198). Seven sera were found to have agglutinins that reacted with *L. icterohemorrhagiae*, seven with *L. canicola*, four with *L. grippityphosa*, two with *L. australis* and one with *L. tarassovi* (Figure 1). Sixteen of the twenty-one positive sera for leptospirosis were negative for hepatitis - associated Australia antigen . The remaining sera were positive at different titers by complement fixation test against Australia antigen.

TABLE 1: Leptospiral Microscopic Agglutination (MA) test results on 80 sera from jaundiced patients in six hospitals in Cairo, Egypt, 1970.

Source of samples	Number of sera tested	Leptospiral MA result	
		Number positive at 1:128 titer or greater	Positive serotype(s)
Abbassia Fever Hospital	198	10	<i>icterohemorrhagiae</i> (4) <i>grippityphosa</i> (3) <i>australis</i> (2) <i>canicola</i> (1)
Embaba Fever Hospital	83	4	<i>icterohemorrhagiae</i> (1) <i>canicola</i> (1) <i>grippityphosa</i> (1) <i>tarassovi</i> (1)
Mounira Hospital	77	2	<i>icterohemorrhagiae</i> (1) <i>canicola</i> (1)
Agouza Hospital	70	3	<i>canicola</i> (3)
Shoubra Hospital	27	1	<i>icterohemorrhagiae</i> (1)
Azhar Hospital	25	1	<i>canicola</i> (1)
TOTAL	480	21 (4.37%)	

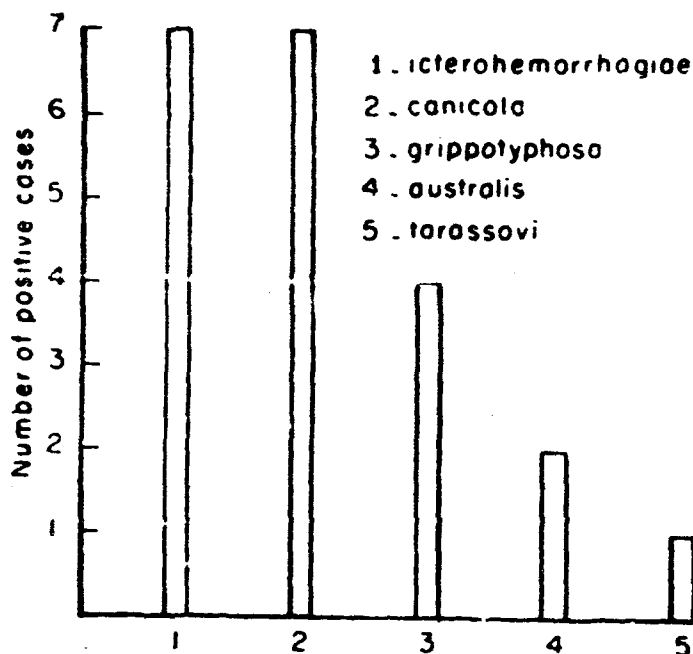


Fig.1 Histogram of the frequency of leptospiral serotypes reacting with 480 sera from Jaundiced patients.

DISCUSSION

The frequency of leptospiral seropositivity of all patients with hepatitis (21/480) was not significantly different from that of apparently healthy persons (3/80) or abattoir workers (2/101) (Maronpot & Barsoum, 1972). The seropositivity among these patients was also less than that found in Tanta Hospital patients (23/270) (Barsoum & Jamison, 1971). Sixty-three sera taken from patients with different diseases from the Abbassia Fever Hospital in 1970 were 100% seronegative for leptospirosis. However, from the same hospital, ten of 198

patients with hepatitis showed leptospiral agglutinins at significant titers of 1:128 or greater. It should be noted that : 1) *L. icterohemorrhagiae* and *L. canicola* were the predominant serotypes in this group of patients, and 2) that *L. icterohemorrhagiae* often causes severe illness characterized by jaundice and renal failure. Occasionally, however, other serotypes may produce an identical clinical picture of equal severity (Galton *et al.*, 1962). In previous serologic surveys in Egypt, *L. grippityphosa* was the predominant serotype in a random selection of normal and hospital populations (McGuire & Myers, 1957; Mandy *et al.*, 1962; Hamed, 1969; Barsoum & Jamison, 1971). The most common probable sources of human leptospirosis are various species of domesticated and wild animals; infection results from direct or indirect contact with urine of infected animals (Galton *et al.*, 1962). Agglutinins to *L. icterohemorrhagiae* were previously detected in sera of pigs, dogs, buffalo and sheep; *L. grippityphosa* antibodies were found in mice, buffalo and cow sera; *L. canicola* antibodies in sera of dogs and pigs, and *L. tarassovi* in cow sera (Maronpot and Barsoum, 1972). Moreover, *L. canicola* was isolated in Egypt from dog kidneys and urine (Maronpot *et al.*, 1971). *L. icterohemorrhagiae* was isolated from mongoose and *L. grippityphosa* from mice (Barsoum & Kaiser, 1972, unpublished results).

Leptospirosis recently has been reported to be a significant cause of jaundice in South Sumatra (Frash *et al.*, 1971). In Egypt, leptospirosis in addition to other infectious diseases must also be considered in the differential diagnosis of jaundiced patients.

SUMMARY

Four hundred-eighty sera from patients with hepatitis were tested for leptospiral agglutinins by Microscopic Agglutination

(MAT) test. Twenty-one sera (44%) were positive at a significant titer of 1:128 or greater. The most predominant reacting serotypes were *L. icterohaemorrhagiae*, *L. canicola* and *L. grippityphosa*. The importance of considering leptospirosis among other infectious diseases in jaundiced patients is stressed.

ACKNOWLEDGMENTS

The authors wish to thank Dr. J. Fresh, Deputy Director, NAMRU-3 and Dr. G. Higashi, Head, Immuno-Parasitology Department, NAMRU-3, for their advices and thorough revision of the manuscript.

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