

ACUTE RHEUMATIC FEVER IN A LARGE SOUTHERN HOSPITAL OVER THE FIVE YEAR PERIOD 1950 THROUGH 1954 *

By SAMUEL L. LIEBER, M.D.,† and JOE E. HOLOUBEK, M.D., F.A.C.P.,‡
Shreveport, Louisiana

MEDICAL literature contains little information regarding the incidence of acute rheumatic fever in the central southern portion of the United States, although in the past there have been reports from other sections.^{1, 2, 3} The purpose of this paper is to report this disease as seen on the wards of Confederate Memorial Medical Center, of Shreveport, Louisiana, a 1,000 bed general hospital for the care of indigent citizens of Louisiana. The drawing area of this hospital is primarily the northern part of the state.

Admissions: During the five year period from January 1, 1950, through December 31, 1954, there were 105,476 admissions to the hospital wards. During the same period the yearly admission rate for the combined Pediatric and Internal Medicine Wards varied from 24% to 30% of the total for the hospital, averaging 26%. The total number of admissions recorded as possible or proved acute rheumatic fever was 343. By fulfilling the criteria for diagnosing acute rheumatic fever established by the Joint Report of the British Medical Research Council and the American Heart Association,⁴ this diagnosis was felt to be established justifiably in 162 admissions. This comprised a five year mean of 0.59% of all admissions to the combined Pediatric and Internal Medicine Wards (table 1). In this group of admissions were 149 different patients. Several of these had repeated admissions for recurrent acute rheumatic fever. The statistics, however, are for total admissions (162), and not for the true case load (149). Since this is such a small number of cases for reporting statistics, and since only 20 white patients were involved, the report has incorporated both races into its calculations, except where indicated below.

Manifestations: Table 2 shows the incidence of major manifestations. A point of interest is the much greater frequency of carditis that was found in the female, giving greater than a two-to-one incidence over the male. Table 3 shows the incidence of minor manifestations.

Race and Sex: Figure 1 gives statistics on incidence by race. Only 12% of the 162 patients were white, the rest Negro. Figure 2 shows sex inci-

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From the Department of Internal Medicine, Confederate Memorial Medical Center, Shreveport, Louisiana.

† Chief Resident, Internal Medicine, Confederate Memorial Medical Center.

‡ Assistant Chief of Staff, Internal Medicine, Confederate Memorial Medical Center.

Requests for reprints should be addressed to Samuel L. Lieber, M.D., Physicians & Surgeons Building West, Shreveport, Louisiana.

dence. Of the 20 whites, 12 were male and eight female, revealing a female-to-male ratio of 1:1.5. Of the 142 Negroes, 53 (37.3%) were male, and 89 (62.7%) female, giving a female-to-male ratio of 1.7:1.

Age: Figure 3 gives incidence by age groups. It is seen that the greatest incidence is in the 10-through-14 year group, followed in turn by the five-

TABLE 1
Relationship of Incidence of Acute Rheumatic Fever to Medical Admissions in Two Louisiana Hospitals

Confederate Memorial (Shreveport)			Charity (New Orleans)		
Year	Rheumatic Fever	Medical Admissions*	Year	Rheumatic Fever	Medical Admissions*
1950†	25	4,840	1049-50‡	70	11,991
1951	31	5,174	1950-51	85	11,604
1952	37	6,010	1951-52	68	11,994
1953	30	5,547	1952-53	83	12,656
1954	39	5,951	1953-54	76	12,910
Total	162	27,522		382	61,155
RF:MA	1:170	(0.59%)		1:160	(0.62%)

* Admissions to the Medicine and Pediatric Wards.

† Calendar year.

‡ Fiscal year—July 1 of one year through June 30 of the following year.

through-nine, then the 15-through-19 groups. Table 4 gives age ranges and mean ages by sex and episode. Of the 162 episodes of acute rheumatic fever, 92 (56.8%) were initial, and 70 (43.2%) recurrent. The mean age for initial episodes was 13.5 years; for recurrent episodes, 15 years; for all episodes, 14 years.

TABLE 2
Incidence of Major Manifestations, 162 Admissions, 1950-1954

Manifestations	White		Negro		Combined		Total	Per Cent
	Male	Female	Male	Female	Male	Female		
Carditis	5	7	24	55	29	61	91	56.2
Polyarthrititis	9	4	37	53	46	57	103	63.6
Chorea	1	2	4	8	5	10	15	9.3
Subcutaneous nodules	0	0	2	3	2	3	5	3.1
Erythema marginatum	0	0	1	0	1	0	1	0.6

Monthly Incidence: Figure 4 reveals a fairly steady number of cases occurring in each of the 12 months over the entire five-year period, the curve giving one maximum in March and a second in November.

Deaths: Of the 162 admissions (149 cases), there were nine deaths (admission incidence of 5.5%; case incidence of 6%). These were all due

TABLE 3
Incidence of Minor Manifestations, 162 Admissions, 1950-1954

Manifestations	White		Negro		Combined		Total	Per Cent
	Male	Female	Male	Female	Male	Female		
Fever	12	7	48	76	60	83	143	88.3
Elevated erythrocyte sedimentation rate	10	7	48	74	58	81	139	85.8
Prior infection	7	4	26	54	33	58	91	56.2
Increased P-R interval	2	1	12	14	14	15	29	17.9
Positive past history	5	3	18	38	23	41	64	39.5

to intractable cardiac decompensation, and consisted of seven Negro females, with an age range of 8 to 12, mean age of 9.9; a 17 year old Negro male and a 20 year old white male, revealing a female-to-male death ratio of 3.5:1.

DISCUSSION

Introduction: Whereas most surveys studying the problem of rheumatic disease concern themselves with limited age groups—for example, limiting cases to those not older than 13 years,⁴ or 20 years⁵—this study includes all cases diagnosed as acute rheumatic fever, regardless of age. Many reports also include cases in an inactive state. These factors make comparison difficult and conclusions subject to error. However, a recent report by Bruce¹

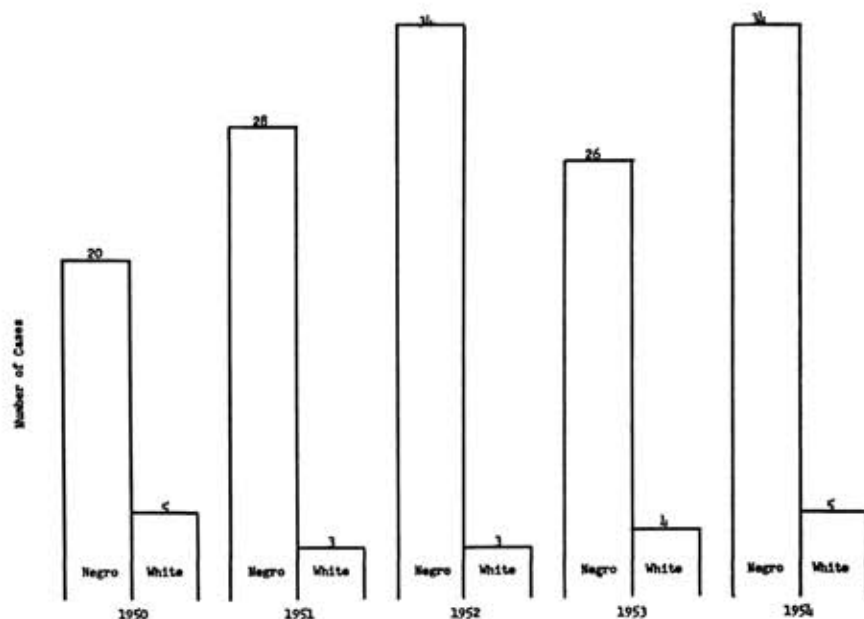


FIG. 1. Race incidence.

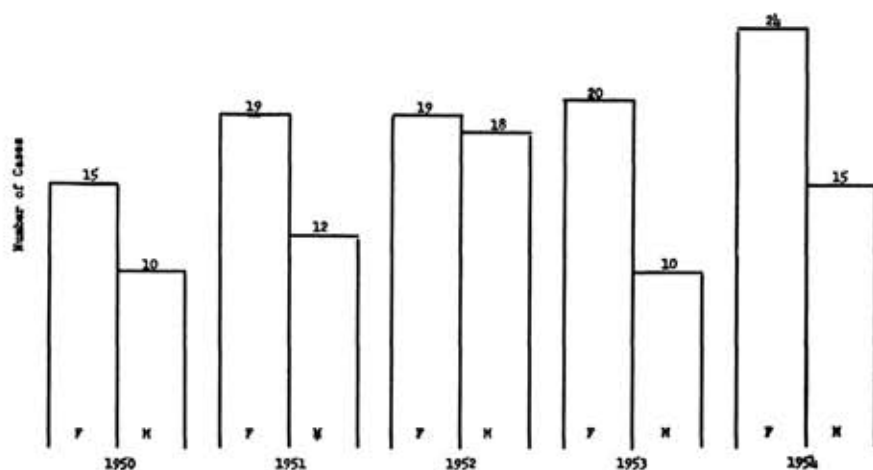


FIG. 2. Sex incidence.

from the State of Washington consisted of a survey limited to acute rheumatic fever, as did another recent report by the British Medical Research Council and the American Heart Association.³

Admissions: In 1935 Seegal et al.⁶ reported on the incidence of rheumatic fever throughout the United States as recorded in major hospitals. Between

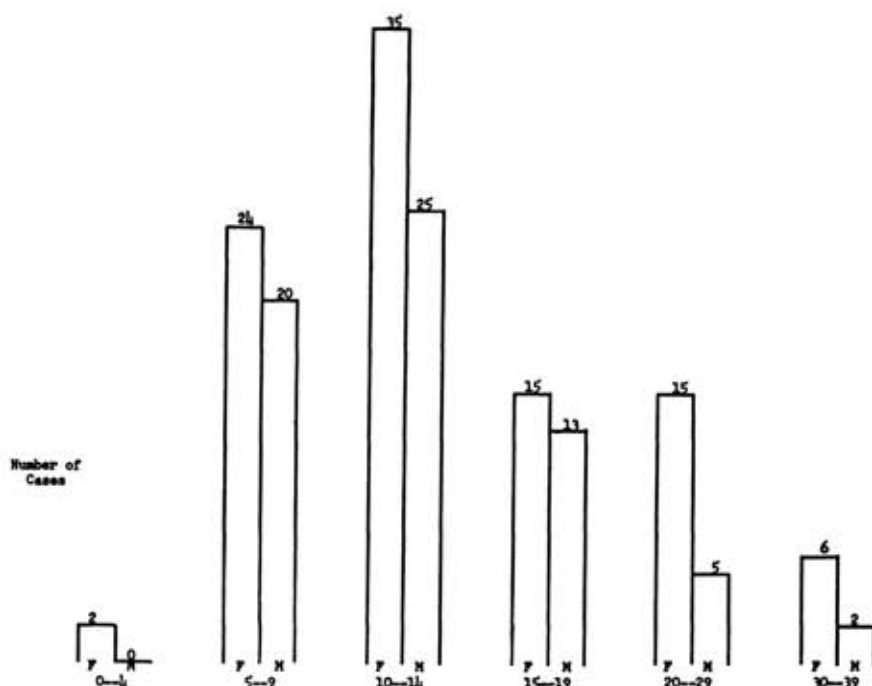


FIG. 3. Incidence by age group.

TABLE 4
Age Incidence by Sex and Episode

	Number of Cases	Per Cent	Age Range	Mean Age
Male				
Initial	38	58.5	6-25	12
Recurrent	27	41.5	6-36	15
Female				
Initial	54	55.7	3-39	14
Recurrent	43	44.3	5-36	15

1910 and 1925 the admission rates to medical wards were 1:70 at Massachusetts General Hospital, Boston, and 1:161 at New Orleans' Charity Hospital. The latter rate compares favorably with the more recent one of 1:170 for the authors' series at Confederate Memorial Medical Center, Shreveport, Louisiana, and remarkably closely with the value 1:160 at New Orleans' Charity Hospital for the period July 1, 1949, through June 30, 1954, as shown in table 1. This implies, as previously pointed out in the literature, the apparently milder course that acute rheumatic fever runs in warmer climates. The lack of remarkably greater occurrence during the winter and spring months may be associated with the generally milder climate in this part of the country, which had a mean temperature of 66.5° F., and a mean rainfall of 41.95 inches during the period studied.

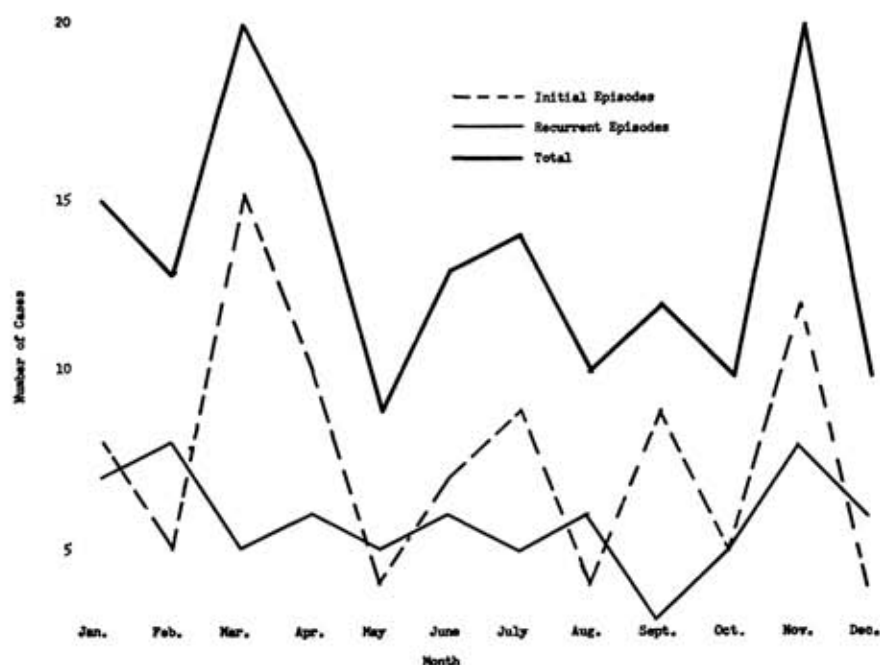


FIG. 4. Monthly incidence of acute rheumatic fever.

Race: The incidence of white admissions in this series was only 12%. This low figure was in part determined by the difference in admissions between the white and Negro races, the latter comprising from 71% to 75% of total hospital admissions during the period studied. Other series give white-to-Negro ratios of 113:20,⁷ 82:14,⁸ and 142:83.⁹ This tremendous variation is undoubtedly due to population ratios in various localities in this country, as well as to available bed space for the two races, and to relative economic levels. A rate corrected for admissions would give about 25% white incidence. This is about twice as high as was found in this survey.

TABLE 5
Major Manifestations—Comparison of Various Series

	Lieber and Holoubek	Bruce ¹	Joos and Katsampes ²	Bland and Jones ³	United Kingdom-United States ⁴
Period studied	1950-54	1951-52	1949-50	1921-51	1951-52
Number of cases	162	386	52 (with active disease)	1,000	497
Age range	3-39	Preschool to over 35	4-24	Under 21	Under 16
Mean age	14	17	11±	8 (original status)	10
Male	65	About equal	31	291	259
Female	97		21	709	238
Major manifestations (per cent)					
Carditis	56.2%	38 ("carditis")	44.5*	63.5	76.4
Arthritis	63.6	76.1	72.2*	41.0	43.3
Chorea	9.3	3.5	19.4*	51.8	10.9
Subcutaneous nodules	3.1	6.5	—	8.8	14.3
Erythema marginatum	0.6	9.5 ("rash")	—	7.1	5.8

* Incidence for 36 cases during the initial episode.

The lower economic level for the Negro in this area, allowing greater crowding and exposure, poor health, and other factors associated with increasing the Group A streptococcal infection in a population, probably accounts for the difference.

Sex: The literature shows differences in sex incidence, some series presenting more male cases^{1,8} and others more female cases.^{4,7} The present series reveals 59.9% of admissions to be females, and 40.1% males, giving an over-all ratio of 1.5:1 for females to males.

Age: Two recent reports^{1,2} deal with incidence of active rheumatic fever, regardless of age. Table 5 gives comparisons with the present series. It is seen that the mean age for the Louisiana Series lies between that for the New York and Washington State series, being 14, 11 and 17 years, respectively.

Manifestations: As shown in table 5, major manifestations occurred in the following order of diminishing frequency: arthritis, carditis, chorea,

subcutaneous nodules, and erythema marginatum. The 63.6% incidence of arthritis compares quite favorably with the mean incidence of the other series of 58%, as does the 56.2% incidence of carditis compare with a 56% mean for the other series. The low incidence of specific rash is most likely due to the difficulty in diagnosing evanescent macular and serpiginous rashes in darkly pigmented skin.

SUMMARY

The incidence of acute rheumatic fever is presented as observed in a large southern (Louisiana) hospital for indigents, covering the five year period January 1, 1950, through December 31, 1954.

Statistics on age, sex and race incidence, and criteria for diagnosis, are compared with other recent surveys.

SUMMARY IN INTERLINGUA

Esseva executate un studio del combine admissiones al departamentos pediatric e de medicina interne del "Confederate Memorial Medical Center" pro le annos 1950 a 1954. Le Centro es un hospital general de 1.000 lectos pro patientes indigente a Shreveport in Louisiana. Le numero total del admissiones esseva 27.522. Le diagnose de acute febre rheumatic esseva establite in 162 casos (0,59%). Le proportion de febre rheumatic esseva 1 caso inter 170 admissiones. Iste proportion es nettemente comparabile al proportion de 1 a 160 constatate pro le mesme periodo al Hospital Charitative de New Orleans. Durante le periodo ab 1910 a 1925 le correspondente proportion al Hospital Charitative de New Orleans esseva 1 a 161, e al Hospital General de Massachusetts illo esseva 1 a 170.

Le total de 162 diagnoses de acute febre rheumatic includeva 20 patientes blanc e 142 patientes negre. Nos opina que le alte incidentia de patientes negre esseva le effecto del relativamente basse nivello economic del population negre in iste area con le consequentia de plus restringite conditiones domiciliari, un hygiene inferior, e plus alte grados de exposition a infectiones per streptococcus del gruppo A. Le serie total includeva 65 masculos e 97 femininas. Le etates variava inter tres e 39 annos. Le etate median esseva 14 annos. Le plus alte incidentia occurreva inter le quinte e le dece-quarte anno del vita. In 92 casos il se tractava de episodios initial; in 70 casos il se tractava de recurrentias de febre rheumatic. Le plus alte incidentia mensual occurreva in martio e novembre.

Le serie includeva nove mortes, octo in negros, un inter le blancos. Omne le mortes resultava de intractabile discompensation cardiac. Le incidentia de major manifestationes de febre rheumatic esseva arthritis (63,6%), carditis (56,25%), chorea (9,3%), nodulos subcutanee (3,1%), e erythema marginate (0,6%).

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