

Epidemic Outbreak of Poliomyelitis in Puerto Rico

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SINCE the establishment of poliomyelitis as a clinical entity in Puerto Rico in 1928, sporadic cases have been reported each year uniformly throughout the island, without significant concentration of cases, except for the years 1942 and 1946, when the disease assumed epidemic proportions, with 117 and 307 cases, respectively. An annual average of 50 cases has been recorded during the last 10-year period. A total of 31 cases with 4 deaths, uniformly distributed among 18 municipalities, was reported during the year 1953. In 1954, considerable poliomyelitis was present in Trinidad, Haiti, and Jamaica, and the epidemic in Puerto Rico was probably part of the larger situation throughout the West Indies.

Data collected by the bureau of transmissible diseases control and by the bureau of crippled children of the Puerto Rico Department of Health have been combined and used in the preparation of this preliminary report of an epidemic of poliomyelitis in Puerto Rico.

During the year 1954, up to the end of the month of October, only 21 cases of poliomyelitis, with no deaths, had been recorded for Puerto Rico. Then, in November, a sudden upsurge in the incidence of the disease took place in the municipality of Toa Baja, which has a total rural population of 13,937 (1950 census). During a period of a little more than 1 month, 27 cases, including 4 deaths, occurred

in rapid succession in a semirural area of 7,000 inhabitants, and the epidemic soon spread to the surrounding territory. Forty cases, with 5 deaths, all among residents of rural areas, occurred in the entire municipality, an attack rate of 287 cases per 100,000 rural population.

The epidemic was soon felt in adjacent municipalities and in the relatively distant municipality of Arecibo, as follows:

<i>Municipality</i>	<i>Total cases</i>	<i>Deaths</i>
Bayamon.....	30	3
Catano.....	31	4
Toa Alta.....	6	1
Rio Piedras.....	14	0
San Juan.....	21	1
Trujillo Alto.....	5	0
Juncos.....	4	0
Arecibo.....	22	1
Total.....	134	10

The epidemic form of the disease appeared in these municipalities in a chronological order that bore a close relation to their distance from the first center of dissemination. Scattered cases, which showed no tendency to epidemic concentration, have occurred in various other municipalities, to bring the total poliomyelitis cases for Puerto Rico during the 3-month period November 1, 1954-January 31, 1955, to 218 cases, including 16 deaths.

Besides its characteristic clinical manifestation, the disease has been confirmed by autopsy findings and by isolation of the virus. Through the cooperation of the United States Army Tropical Research Medical Laboratory at San Juan, P. R., type I (Brunhilde) virus has been

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Table 1. Municipalities in Puerto Rico in which poliomyelitis was recorded during the period Nov. 1, 1954-Jan. 31, 1955

Municipality	Population	Number of cases	Rate per 100,000 inhabitants	Municipality	Population	Number of cases	Rate per 100,000 inhabitants
Aibonito (5)-----	18, 191	1	5. 5	Luquillo (44)-----	9, 967	1	10. 0
Arecibo (7)-----	75, 361	22	29. 2	Manatí (45)-----	30, 449	2	6. 6
Barranquitas (10)-----	17, 605	1	5. 7	Moca (49)-----	21, 614	1	4. 6
Bayamón (11)-----	48, 000	30	62. 5	Morovis (50)-----	19, 291	1	5. 2
Caguas (13)-----	60, 132	2	3. 3	Naguabo (51)-----	21, 019	2	9. 5
Carolina (15)-----	29, 224	1	3. 4	Naranjito (52)-----	15, 927	3	18. 8
Cataño (16)-----	19, 865	31	156. 0	Ponce (56)-----	126, 810	1	. 8
Comerio (22)-----	17, 966	1	5. 6	Río Grande (59)-----	16, 651	1	6. 0
Corozal (23)-----	23, 087	4	17. 3	Río Piedras (60)-----	143, 989	14	9. 7
Dorado (25)-----	11, 749	1	8. 5	San Juan (64)-----	224, 767	21	9. 3
Guaynabo (30)-----	29, 120	5	17. 2	San Lorenzo (65)-----	29, 248	1	3. 4
Gurabo (31)-----	16, 395	2	12. 2	Toa Alta (68)-----	14, 155	6	42. 4
Hatillo (32)-----	20, 877	3	14. 4	Toa Baja (69)-----	15, 761	40	253. 8
Humacao (34)-----	34, 853	3	8. 6	Trujillo Alto (70)-----	13, 605	5	36. 8
Juncos (38)-----	21, 654	5	23. 1	Villalba (75)-----	14, 972	1	6. 7
Lares (40)-----	29, 951	2	6. 7	Total-----	1, 233, 218	218	17. 7
Las Piedras (42)-----	16, 208	1	6. 2				
Loíza (43)-----	24, 755	3	12. 1				

NOTE: Figures in parentheses refer to key number of municipality (see map).

isolated in two different specimens of brain tissue collected at autopsies.

Table 1 shows, by municipalities, the distribution of cases of poliomyelitis in Puerto Rico and the corresponding incidence rate per 100,000 population during the 3-month period of the study. The incidence rate is more graphically expressed in the accompanying map. The chart shows the weekly distribution of cases throughout the year 1954 and the first weeks of 1955.

The urban and rural distribution of cases

Table 2. Urban and rural distribution of cases of poliomyelitis and corresponding distribution of the general population exposed, Nov. 1, 1954-Jan. 31, 1955

Residence	Cases		Population ¹ exposed	
	Number	Percent	Number	Percent
Total-----	218	100. 0	1, 074, 475	100. 0
Urban-----	115	52. 8	571, 699	53. 2
Rural-----	103	47. 2	502, 776	46. 8

¹ 1950 census.

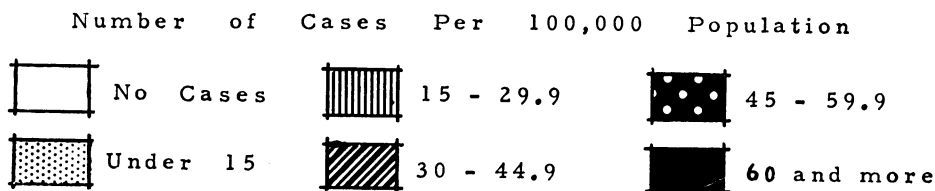
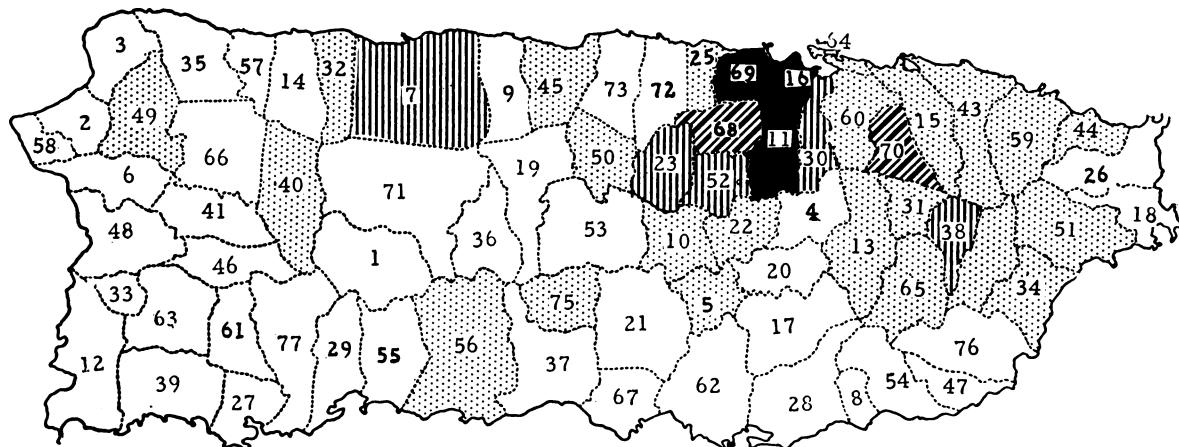
Table 3. Confirmed cases of poliomyelitis in Puerto Rico recorded during the 3-month period Nov. 1, 1954-Jan. 31, 1955, according to age and sex

Age groups	Sex			Percent in each age group	Cumulative percentage
	Male	Female	Total		
Total-----	120	98	218	100. 0	-----
Under 6 months---	6	5	11	5. 0	5. 0
6-12 months-----	17	12	29	13. 3	18. 3
1-2 years-----	60	47	107	49. 1	67. 4
3-4 years-----	20	24	44	20. 2	87. 6
5-9 years-----	12	9	21	9. 6	97. 2
10 years and over--	5	1	6	2. 8	100. 0

and the corresponding composition of the general population exposed is shown in table 2. The distribution of cases corresponds almost exactly to the urban-rural distribution of the exposed population.

Table 3 shows the age and sex distribution of cases recorded during the period November 1, 1954-January 31, 1955. This age distribution is remarkably similar to the age distribution during the previous epidemics in 1942 (1) and 1946 (2) and follows closely the usual pattern

**Distribution of poliomyelitis cases in Puerto Rico, by municipalities, during the 3-month period
November 1, 1954–January 31, 1955**



of age distribution characterizing tropical epidemic poliomyelitis. Five percent of the cases occurred in children under 6 months of age, and practically 90 percent belong to the age group

under 5 years, with especially marked concentration in children under 2 years of age (68 percent). Only 6 cases, or less than 3 percent, occurred in persons aged 10 years and over.

Table 4. Confirmed cases of poliomyelitis in Puerto Rico during the 3-month period Nov. 1, 1954–Jan. 31, 1955, according to severity of involvement

Severity	Cases	
	Number	Percent
Total.....	218	100.0
Severe ¹	103	47.2
Mild ²	71	32.6
Cured ³	18	8.3
Died ⁴	16	7.3
Not specified ⁵	10	4.6

Table 4 shows the classification of cases according to the severity of involvement, based on preliminary evaluation at the termination of the acute stage of the disease.

Aiming at uniformity of classification of cases according to severity of involvement, after due consideration and discussion by pediatricians and orthopedic surgeons, the following classification was selected: severe, mild, cured, died, and not specified. The number of cases in each of these groups (table 4) is summarized below, according to whether the cases were paralytic or nonparalytic.

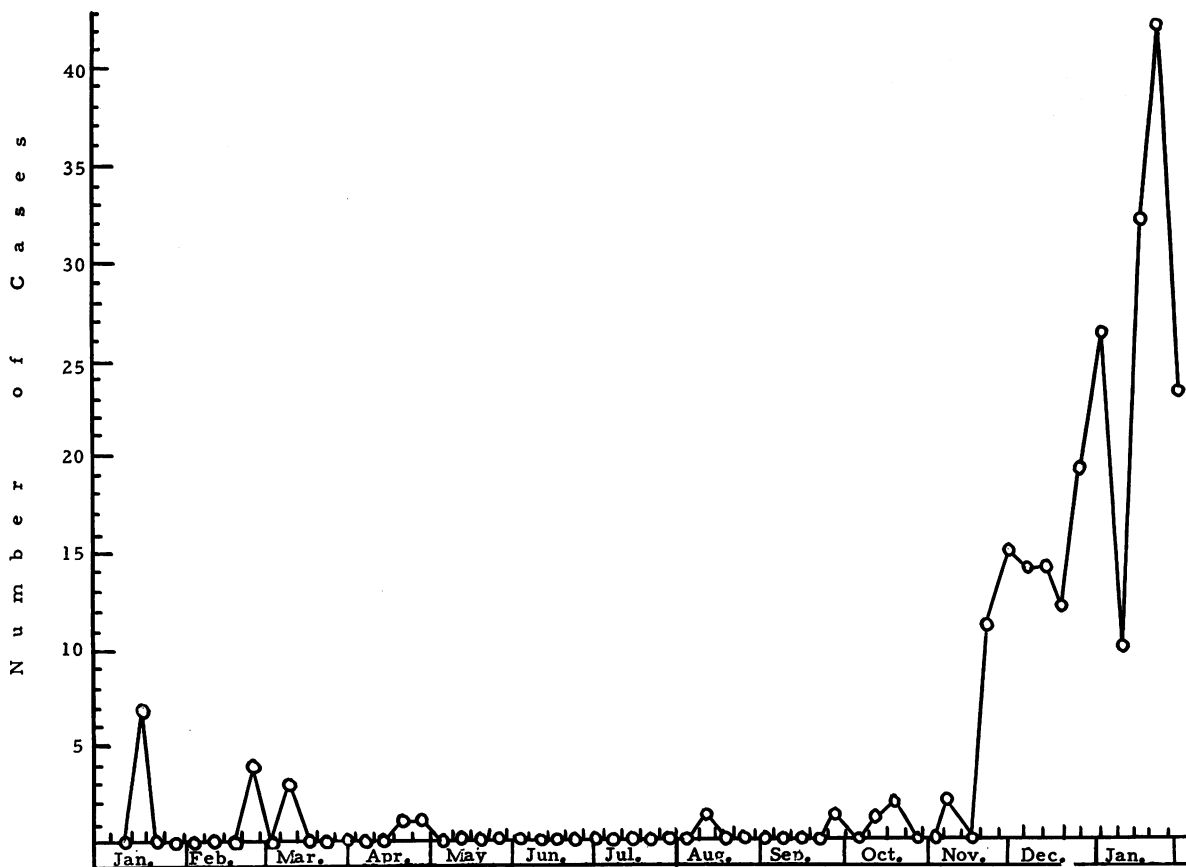
Severity	Number	Percent
Paralytic.....	¹ 119	54.5
Nonparalytic.....	² 89	40.9
Not specified.....	10	4.6

¹ 103 cases; 16 deaths. ² 71 mild; 18 abortive.

¹ Involvement of one or more extremities, with paralytic manifestations. ² Absence of paralysis. Muscular debility of one or more groups of muscles only. ³ No residual paralysis or muscular weakness. Includes abortive and spontaneous complete recoveries. ⁴ Severe cases terminating in death. ⁵ Data not available. Mostly cases treated at home by private physicians.

From the very beginning of the outbreak, control measures were taken. These consisted

Weekly number of confirmed cases of poliomyelitis in Puerto Rico during the calendar year 1954 and January 1955



chiefly in encouraging early diagnosis, with competent free consultation services at all times to private physicians by pediatricians and orthopedic surgeons of the department of health; prompt hospitalization in our district hospitals of suspicious or confirmed cases during the acute stage for observation, confirmation of diagnosis, and proper treatment, with subsequent followup treatment of residual paralysis or muscular weakness at the termination of the acute stage in a convalescent hospital with specially trained personnel and without limitation of hospitalization period required by each individual case; and followup observation of home cases in our diagnostic and plastic clinics.

Gamma globulin has been administered to familial and other intimate contacts under 10 years of age of known poliomyelitis cases, and general instructions frequently have been given to the public through the daily press and radio programs.

REFERENCES

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