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AGE-SPECIFIC REACTIONS TO SKIN TEST

FOR

SCHISTOSOMIASIS IN NINE ENDEMIC

MUNICIPALITIES OF PUERTO RICO

1969-1976.

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Abstract

Although general evaluations have shown large decreases in antigen reactivity in Puerto Ricans Anside the schistosomiasis control projects, little detail has been presented in age specific rates or

on individual municipalities. This report giv

such additional information for surveys in 1969 and 1976 in Luquillo, Rio Grande and Yabucoa, muntetpa-Lities not in the original control program, and for 6 other municipalities which had been part of the control program since 1955. The age-specific curves of positivity to the antigen showed steep rises between children 6 years of age to 18 years of age, indicating significant transmission in the recent past in all areas before 1969. By 1976 the positivity rates had inereased in the uncontrolled municipality of Luquillo but had decreased markedly in most of the controlled municipalities, However in Naguabo there was evidence that transmission had not decreased significantly despite many years of snail control.

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Age-Specific Reactions to Skin Test for

Schistosomiasis in Nine Endemic

Municipalities of Puerto Rico, 1969-1976.

General evaluations have been made on the island-wide changes in prevalence of schistosomiasis in Puerto Rico, but transmission patterns have not been reported An any detail (1 and 2), It was the purpose of this Feport to present additional information on reactivity to the skin test in the most important endemte areas of Puerto Rico. Mine municipalities were included in this Feport, 3 from the endemic area not part of the Health Department's Control Program in 1969 at the beginning

of this study, and 6 municipalities which had been placed under control in 1955 (Aibonito, Arroyo, Guayama, Patillas, and Vieques, Figure 1).

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0914 O1NaNd 4O S3UNLV34 IVOIHdVYD0ID GNY SNMOL worYW

SW3ISAS NoLLVoI4uL

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Adult schistosones were used to prepare antigen

bY standard procedure: (2), Over 15,000 schoolehtldren

were injected on the volar aspect of the forearm with

0-05 milliliters of antigen and their reactivity read

15 minutes later. Tho criteria for positivity were

@ Feaction wheal greater than 1.0 square centiaeters

for all girls and for boys under 1% years of age.

For boys 16 years of age and older the reaction wheal

had to be 1.2 square centimeters or larger to be

considered positive. The antigen batches used in

1969 and 1976 were standardized against each other (3).

AIl children in the public schools of the indtcated

muntotpalitios were tosted in the surveys of 1969 and

children in a11 fifth grade classrooms of the sane

suntotpalitios were tested in 1976. Thus an age-specific

curve of positivity to the skin test was obtained for

1969 and the positively for children of ages 10 to

11 for 1976. ALL skin test infections were performed

by the

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Results

Results from the skin-test have to be interpreted with care, due to its well known limitations (4). However the Fepetition of the test under similar circumstances in

the same population has considerable practical value in assessing large changes in distribution and level of schistosome infections.

Of the three municipalities not under control in 1969, Yabueoa was then included in the control program in 1970 using snail control by ditching, by mollusetetéing and by biological control where appropriate (1). However no control effort was introduced in Luquillo or Rio Grande before 1976, thus these two communities indicated the course of transmission in the absence of snail control.

The mean age-specific reactivity in these 3 communities in 1969 rose from 8% for 6 year olds to 25% for 16 year olds (Taple 1 and Figures 2 and 3). The inert

fe in positivity

with age was quite uniform and continuous, indicating relatively stable transmission conditions previous to 1969.

The age-specific prevalence in the children from the

controlled municipalities showed much more irregularity

with

ny decreases of prevalence with increasing age,

Andicating sone sporadic transmission despite control efforts

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1, Figures 4 and 5).

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IN PER CENT

REACTORS

Positive

7

UNCORPESIFIC REACTIVITY To SCHISTOSOME SKIN TEST IN

UNCONTROLLED MUNICIPALITIES OF LUQUILLO AND Rio

50%

45%

40%

35%

30%

25%

20%

13%

10%

3%

GRANDE, PUERTO RICO, 1969-1976

Luauitto

1969

(MEAN)

Liste»

Hf

1969 MEAN FOR YABUCoA,

WUQUILLO AND RIO GRANDE

6 10 12 14 6

AGE IN YEARS

FIGURE 2

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®

AGE-SPECIFIC REACTIVITY To SCHISTOSOME SKIN TEST IN

MUNICIPALITY OF YAaBUCOA, PUERTO RICO, 1969-1976

cenr

REACTORS IN PER

Positive

50%

45%

40%

35%

30%

25%

20%

15%

10%

5%

ee

YaBucoa

1969

1969 MEAN FoR YAaBucoa,

LUGUILLO AND RIO GRANDE

10 2 16 16 6

AGE IN Years

FIGURE 3

---Page Break---

PER CENT

POSITIVE REACTORS

9

AGE SPECIFIC REACTIONS TO SCHISTOSOME SKIN TEST

IN CONTROLLED MUNICIPALITIES OF AIBONITO, ARROYO,

GUAYAMA AND PATILLAS, PUERTO RICO

1969 - 1976

50%

45%

GUAYAMA 1969

40%

35%

IN

ous

30% \,

25%

20%

15%

\\1969 MEAN FOR 3 UNCONTROLLED

MUNICIPALITIES.

10%

3%

1976 REACTIVITY

iO 12 14 16 is ~

AGE IN YEARS

FIGURE 4

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AGE- SPECIFIC REACTIVITY TO SCHISTOSOME SKIN TEST

IN CONTROLLED MUNICIPALITIES OF NAGUABO AND VIEQUES,

50%

45%

40%

CENT

35%

PER

z 30%

REACTORS

z

8

z

Positive

2

10%

5%

PUERTO RICO, 1969-1976

NAGUABO 1969

1969 MEAN FoR

UNCONTROLLED.

MUNICIPALITIES,

ea /

N\

10 2 4 16 18

AGE IN YEARS

\.Vieques

i969

FIGURE 5

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u

In fifth grade children, the only age-group tested both in 1969 and 1976, the proportion of positives in the 3 muntetpalities not in the original control program was siightly higher in 1969 in Yabucoa (26%) than in Rio Grande and Luquillo which were 16% and 6% respectively (Table 2

and Figures 2 and 3). By 1976 the prevalence in Yabucoa decreased to 12% while it rose to 27% in Luquillo and Fenained about the same in Rlo Grande, apprently showing

the effects of the control program in Yabucoa (3).

The age specific curves for four of the municipalities of the original controt program showed generally higher slopes than the non-controlled comsunities in 1969 (Figure 4). The positivity in Guayana rose from 20% for 9-10 year olds to 40% for 13 year olds.

The positivity of fifth graders (10-11 years old)

showed a marked decrease in all four of these muntcipaliti.

decreasing to less than 58 which is about the normal rate Of false positives in a non-endenic community. This

decrease was a clear indication of a successful control Program when compared with the increase observed in Luquillo and Rio Grande (Table 1).

In Naguabo and Vieques Island there also was a decrease in positivity for fifth graders, but 1t was not very large, indicating less effectiveness of the control

operation in these two municipalities, especially Naguabo (Figure 5).

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Table 2

Reactivity to skin test for schistosomes

in fifth grade children of nine endemic municipalities

in eastern Puerto Rico, 1969-1976

Se

Controlled 19691976 (3)

See

Albonito 21.68 5%

Arroyo 15.68 2.0%,

Guayama 25.88 5.28

Naguabo 14.68 9.08,

Patillas 10.58 2.98

Vieques 10.18 ae,

Yabucoa 28.0% la.se

????

Uncontrolled

Municipalities

ee

Luquilio 6.28 27.48

Rio Grande 15.78 13.58

eS

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BD

The mean ag

Specific slope for Vieques was much lower

than that for Naguabo, indicating active transmission had

occured previous to 1969.

The previous evaluations of the control effort had showa:that the proportion of skin test reactors in the control areas decreased much faster than in uncontrolled areas, as confirmed by this evaluation (1). In addition we can rank the control projects in general terms, based on this more detailed analysis.

During the period fron 1969 to 1976 the projects in Atbonito, Arroyo, Guayama, Patillas and Yabucoa showed marked Improvenents whereas Vieques and Naguabo showed much less impact from the control efforts.

1 addition there was a serious increase in reactivity

in Luquillo indicating active transmission.

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