EPIDEMIOLOGIC STUDY OF BRONCHOPULMONARY MYCOSIS IN THE PROVINCE OF CORDOBA, ARGENTINA

Diana T. MASIH, Blanca E. MARTICORENA, Noemi BORLETTO, Camillo FARIAS & Ricardo NEGRONI

SUMMARY

An epidemiological study for histoplasmosis coccidiodomycosis and cryptococcosis made in five areas of the province of Córdoba is presented. The data obtained showed a global positivity of 41.1% for histoplasmin 26.7% for coccidioidin and 14.1% for cryptococcin.

In some areas, the Río III basin and Traslasierra, the histoplasmosis infection indexes were much higher, 53.3% and 73.1% respectively. The index of positive skin tests with Cryptococcus antigen in Traslasierra was also very high: 31.9%.

KEY WORDS: Bronchopulmonary mycosis — lung; Epidemiology

INTRODUCTION

Deep mycosis are diseases whose geographic distribution is determined by the evolutive cycle of each fungus. The Histoplasma capsulatum in its environmental infecting phase lives in areas of mild humidity, warm and fertilized by birds’ excrements. In Argentina, these areas correspond to the so called humid Pampa. The Coccioides immitis, on the contrary requires semiarid land with seasonal rains. These conditions only occur in a semi-desertic strip that stretches from North to South along the Andes range.

The Cryptococcus neoformans is a cosmopolitan yeast, mainly appearing in soil contaminated by pigeons’ excrements.6,7

Man gets infected by living or going through these areas and inhalin spores which provoke a mycotic parenchymatous and ganglionary primoinfection. This injury, localized most of the times, heals spontaneously, and in this case the only permanent immunologic sign is the positivity of delayed hypersensitivity cutaneous tests which may last through life. Therefore, these tests are most useful to study endemic areas.

Epidemiologic surveys on histoplasmosis and coccidioidomycosis were carried out in the province of Córdoba (NOBILE et al. 1966)6, obtaining 2.29% positivity for coccidioidin and 3.44% for histoplasmin, whereas QUINTEROS et al.7 obtained figures which varied from 17% to 42% for histoplasmin.

No previous epidemiologic data about cryptococcin are known in the country due to the lack of an appropriate antigen. In U.S. (Oklahoma), MUCHMORE et al.4, made a survey which showed 26/82 positive cutaneous reactions. In Brazil, MELHEM and LACAZ found a positivity index of 4.38% in two epidemiologic studies made in São Paulo on 388 people. The finding of indigenous clinical cases of histoplasmosis, coccidioidomycosis and cryptococ-
cosis in the city of Córdoba led us to perform an epidemiologic survey in different places, preferably in the areas where the patients came from.

Description of the Region Studied. The province of Córdoba is situated in the centre of the Argentine Republic, 480 Km from the Atlantic Ocean and 520 Km from the Pacific.

It is more or less clearly divided into two regions: in the south east, a plain devoted almost completely to agriculture and cattle raising. In the north west, plains and low hills with authochtonous vegetation on the xerophilous type.

The mean annual temperature ranges from 16°C to 18°C, the maximum mean from 20°C to 25°C and the lower mean from 9°C to 11°C.

Rainfall is predominant in summer. In the areas studied it is higher than 500 mm annually, with figures of 600 mm up to 800 mm in all areas except in San Francisco where they are higher than 900 mm annually.

MATERIAL AND METHODS

Delayed hypersensitivity tests with histoplasmin, coccidioidin and cryptococcin were performed on people from five different areas of the province of Córdoba. These areas were: 1) The capital of Córdoba and its surroundings up to 40 Km, which included Alta Gracia and Jesus Maria, 2) The Rio III basin which included the cities of Villa Maria, Rio III and some small towns in the surroundings. 3) San Francisco and small neighboring villages. 4) Rio IV and its surroundings and 5) Traslasierra. (Fig. 1).

Patients from both sexes were selected, with ages ranging from 16 to 60 years old, who were considered to have no immunologic compromise, that is to say people who were not carriers of diabetes, neoplasias, corticoid or cytostatic treatments or states of extreme caquexia. Positive reactions to tuberculin were selected.

All the antigens were elaborated by professor Ricardo Negroni in the Mycology Center of the National University of Buenos Aires.

Fig.1 — Zone of Province of Córdoba.
Zone 1: Rio III basin (Villa Maria, Rio III).
Zone 2: San Francisco.
Zone 3: Rio IV.
Zone 4: Villa Dolores (Traslasierra).

The application technique was conventional: 0.1 ml in the anterior side of the forearm, reactions were read between 24 and 72 h later and all induration greater than 8 mm was considered positive.

All persons with positive skin test were studied with X-ray films of the chest. Besides, double radial immunodiffusion with the homologous antigen was performed.

RESULTS

A total of 556 cutaneous tests were made, 180 with coccidioidin, 185 with histoplasmin and 191 with cryptococcin; 48 tests were positive for coccidioidin (26.7%), 76 were positive for histoplasmin (41.1%) and 27 were positive for cryptococcin (14.1%).

The results for the different geographic areas are shown in Table N.° 1.

Complementary studies carried out with positive reactors (thorax X-ray and double immunodiffusion) were negative in all cases.

DISCUSSION

The primary goal of this paper was to stu-
T A B L E 1
Cutaneous tests *

<table>
<thead>
<tr>
<th>Zone</th>
<th>Cryptococcin</th>
<th>Histoplasmin</th>
<th>Coccioidin</th>
</tr>
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<tbody>
<tr>
<td>District and surroundings</td>
<td>2/36 (5.3%)</td>
<td>5/34 (14.7%)</td>
<td>2/22 (6.3%)</td>
</tr>
<tr>
<td>Río III Basin (Villa Maria, Río III)</td>
<td>0/30 (0.0%)</td>
<td>18/39 (53.3%)</td>
<td>7/30 (23.3%)</td>
</tr>
<tr>
<td>San Francisco</td>
<td>1/13 (7.7%)</td>
<td>3/13 (23.1%)</td>
<td>3/12 (25.0%)</td>
</tr>
<tr>
<td>Río IV</td>
<td>2/41 (4.9%)</td>
<td>3/41 (7.3%)</td>
<td>14/41 (34.1%)</td>
</tr>
<tr>
<td>Villa Dolores (Traslasierra)</td>
<td>22/69 (31.9%)</td>
<td>49/67 (73.1%)</td>
<td>22/65 (33.8%)</td>
</tr>
<tr>
<td>Totals in the Province of Córdoba</td>
<td>27/191</td>
<td>76/185</td>
<td>48/180</td>
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* Induration greater than 8 mm was considered positive.

dy the geographic distribution of infection by Histoplasma, Coccioidoides and Cryptococcus in the province of Córdoba.

Percentages of positivity obtained for histoplasmin and for coccioidin were 41.1% and 26.7% respectively. The distribution of infection areas is most relevant: for histoplasmin there are two areas with high positivity, the Río III basis (53.3%) and Traslasierra (73.1%). These figures are far higher than the averages in the rest of the country. In contrast, Río IV, situated right in the humid pampa, which might mean greater infection, only has 7.3%. For coccioidin, infection figures in Río IV and Traslasierra were somewhat higher than expected, specially taking into account that these areas do not have semiarid climate. Their vicinity with San Luis could be a plausible explanation, since this province has shown a high percentage to coccioidiomycosis infection.

As regards the indexes of cryptococcosis infection, they coincide with the ones found by the authors previously cited, with the exception of Traslasierra where this index is 31.9%. Since both the histoplasmin and cryptococcin results were very high in this area, a search was carried out to find pathogenic fungi in the soil. It was possible to isolate Cryptococcus neoformans and Coccioidoides immitis, which will be subject matter for another publication.

RESUMEN

Estudio epidemiológico para micosis bronco-

pulmonares en la provincia de Córdoba, Argentina

Se presenta un estudio epidemiológico para histoplasmosis, coccioidiomycosis y criptocosis realizado en cinco zonas de la provincia de Córdoba. Los datos obtenidos demostraron una positividad global de 41.1% para histoplasmina, 26.7% para coccioidín y 14.1% para criptococina.

En algunas regiones, cuenca del Río III y Traslasierra los índices de infección para histoplasmosis fueron mucho más altos, 53.3% y 73.1% respectivamente. También las intradermorreacciones para criptococosis en Traslasierra fueron muy elevados: 31.9%.

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REFERENCIAS


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