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Results of a systematic screening programme of Chagas disease in immigrant population in Spain

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Background: The arrival of individuals from Chagas endemic areas to non-endemic countries due to immigration makes possible the detection of this disease in patients from these latter areas. The need for technical screening for this disease in this population group has been postulated. We describe the results of a screening programme conducted in the immigrant population coming from endemic areas to a region in northern Spain.

Material/methods: Between 2007 and 2015, we determined anti-*T. cruzi* antibodies in all immigrant patients proceeding from endemic areas in follow-up at the Tropical Medicine Unit of the Hospital Central de Asturias, a university hospital in northern Spain. The IDChagas antibody test (particle gel immunoassay (PaGIA); DiaMed-ID) was used as a screening assay. All positive samples were sent to the Centro Nacional de Microbiologia (Instituto Carlos III, Spain) to confirm the result by determination of anti-*T. cruzi* antibodies by indirect immunofluorescent antibody test (IFAT) and by polymerase chain reaction (PCR). In all the confirmed cases, a protocol that included a clinical epidemiological evaluation, chest X-ray, electrocardiogram, esophagogastroscopy, barium enema, and echocardiography was applied.

Results: 281 patients (67% female; mean age 35[11] years, mean time in Spain 1737 [1316 days]) were screened. The most frequent country of origin was Ecuador (37.7%), Bolivia (17.4%), Colombia (15.3%), Brazil (12.5%), Paraguay (7%), Venezuela (4.3%), Argentina (3.4%), and others (2.5%). Chagas disease antibodies were detected in 33 patients (11.7%), which were confirmed by IFAT and PCR in all cases. Direct microscopic examination of blood was negative in all cases. No statistically significant differences in sex and age between positive and negative patients were found. The mean time in Spain was significantly higher in positive patients (p=0.048, 2014 [1263] vs 1700[1308] days). The country prevalence was 53% for Bolivia (p = 0.00001, OR 36 [14-92]), 22% for Argentina (p=0.637) 11.4% for Brazil (p = 0.6), and 10% for Paraguay (p=0.575). All patients who tested positive had lived in households where the reproduction of triatomine bugs was possible. They had lived in rural areas of Latin American in houses covered with a straw roof. While two patients reported palpitations, the rest were asymptomatic. Additional studies were normal in all patients. All patients were treated with benznidazole (5 mg/kg/day) for 60 days with good tolerance.

Conclusions: *T. cruzi* infection occurs not only in endemic areas but also in non-endemic areas of North America and Europe, where the diagnosis may be even more difficult, hence screening programmes are especially important in this population group. The implementation of screening programmes in this population group becomes necessary for the early diagnosis of Chagas disease even in areas with low migratory flows such as Asturias, Spain. In our experience, most patients are immigrants coming from Bolivia.