

Chagas disease in Italy: an update of epidemiological studies

Spinello Antinori^{1,2}, Andrea Giacomelli², Federico Sabaini^{1,2}, Giacomo Casalini^{1,2}, Anna Lisa Ridolfo²

¹Department of Biomedical and Clinical Sciences, Università degli Studi di Milano, Italy;

²III Division of Infectious Diseases, ASST Fatebenefratelli Sacco, Luigi Sacco Hospital, Milan, Italy

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Dear Editor,
We read with interest the paper by Raglio et al. reporting their seven-years' experience regarding Chagas disease (CD) screening among Bolivian migrants in Bergamo province [1]. Overall, they showed a 19% prevalence for CD serology (210/1105) with 11.7% prevalence among pregnant women (60/512). In their experience only one newborn had a confirmed congenital Chagas disease and this case has been previously published as a single case report and as a part of a study demonstrating a 4.3% rate of vertical transmission of *Trypanosoma cruzi* [2, 3]. These figures are in agreement with a systematic review and meta-analysis conducted by Colombo et al. on Latin American (LA) pregnant women living outside endemic areas [4]. They found a 4.2% pooled prevalence of *T. cruzi* infection among LA pregnant women with a 15.5% pooled prevalence in pregnant women from Bolivia and a global rate of congenital transmission of 3.5% [4].

However, Raglio et al. citing a study by Angheben et al. state that "it was confirmed that among Bolivians immigrants 30.7% had a positive serological results, which is in accordance with other published studies but in contrast with to Antinori et al., that showed a lower prevalence of positive results" [5, 6]. At variance with their statement, the prevalence of CD reported by Angheben among Bolivian migrants was 18% and in our study 25.4% [4,6]. As shown in table 1 [3, 5, 7-13, 15-19], the three-four fold higher prevalence

reported in different studies conducted so far in Italy among Bolivian immigrants in comparison with the country seroprevalence estimates (6.1%) by World Health Organization are probably the consequence of the phenomenon of cluster immigration from areas with the highest seroprevalence (for instance Santa Cruz, Cochabamba) [14]. However, it should be highlighted that not only Bolivians, who are certainly those at highest risk of having acquired CD in their country of origin, but also other population of LA immigrants should be targeted for serological screening as demonstrated by Beltrami et al., in their recent study involving Salvadoran people [17]. In non-endemic countries such as Italy, autochthonous cases of CD can occur by vertical transmission from mother to child, by transfusion with blood and blood products and through the transplant of solid organs or hematopoietic stem cells. As far as the mother-to child transmission, following the first case described in Bergamo, a cluster of congenitally infected children has been identified in Milan among Bolivian immigrants [2, 18]. Except for the Tuscany Region where serological screening for CD is included among the free laboratory investigations that can be performed during pregnancy according to a Regional resolution [16] we are aware of this chance only available in Bergamo and in Milan as a part of an ongoing study [19]. In Italy blood donation by at risk candidate donors (i.e., people born in Latin America or from Latin American mothers and travellers with a history of rural or outdoors activities in endemic countries) is regulated by the Italian transfusion regulation (L.219, D.M. 02/11/2015) [20]. Two studies so far addressed this issue : the first one conducted in Tuscany evaluated the use of an

Corresponding author

Spinello Antinori

E-mail: spinello.antinori@unimi.it

immunochromatographic test (ICT) as a screening on donated blood and the second one was a survey conducted by the Italian National Blood Centre (INBC) to gather information on the management of donors at risk of CD in the national Blood Establishments (BEs) [12, 13]. The study by Mangano et al., provided evidence of the lack of

sensitivity and specificity of ICT as a screening test for blood donors at risk of CD [12]. The INBC survey involving a representative sample of BEs during the years 2020 and 2021 showed a low rate of confirmed positive blood donation: 0.06% in 2020 (66/100,000 donors tested) and 0.05% in 2021 (55/100,000 donors tested) [13]. A last point that

Table 1 - Studies conducted in Italy on Chagas disease prevalence in different setting and populations

Author/Reference	Population studied	Type of study	Years	Province(s)/Region(s)	Overall prevalence of <i>T. cruzi</i> infection	Prevalence of <i>T. cruzi</i> infection according to country of origin	Comment
Angheben [5]	LA migrants, adoptees, expatriates, travelers	Retrospective/ Screening of blood donors and pregnant women	1998-2010	Verona, Florence/Veneto, Tuscany	36/867 (4.2%)	Bolivia 28/157 (18%) Brazil 1/225 (0.4%)	266 migrants; 100 expatriates; 28 travellers; 457 adopted children
Antinori [6]	LA migrants	Cross-sectional	2013-2014	Milan/Lombardy	48/501 (9.6%)	Bolivia 43/169 (25.4%) El Salvador 4/68 (5.9%)	Mixed population of LA immigrants
Repetto [8]	LA migrants	Retrospective cohort	2012-2013	Bergamo/Lombardy	223/1305 (17%)	Bolivia 223/1176 (18.3%)	90% born in Bolivia
Rodari [3]	Pregnant women	Screening program	2014-2016	Bergamo/Lombardy	28/376 (8.7%)	Bolivia 28/376 (8.7%)	Exclusive Bolivian women; congenital transmission 1/29 (4.3%)
Pane [10]	LA migrants	Cross-sectional	2014	Rome/Latium	32/368 (8.7%)	Bolivia 27/115 (23.5%) El Salvador 2/ (6.2%)	Mixed population of LA immigrants
Di Girolamo [9]	LA migrants	Cross-sectional	2010-2013	Bologna/Emilia-Romagna	12/151 (7.9%)	Bolivia 10/33 (30.3%) Argentina 2/13 (15.4%)	Mixed population of LA immigrants
Martelli [11]	LA migrants	Cross-sectional	2012-2014	Bologna, Brescia, Rome, Verona/Lombardy, Latium, Veneto	7/180 (3.9%)	NR	Multicentre study aiming to evaluate seroprevalence of five neglected diseases including CD
Rodari [15]	HIV-positive migrants	Retrospective on a observational Italian cohort	1997-2018	NR/NR (Italy)	5/383 (1.3%)	NR	ICONA cohort; retrospective analysis of stored sera from 1997 to 2018

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Mangano [12]	Blood donors	Screening for identification of at risk-blood donors	2014-2018	Livorno, Lucca, Massa Carrara, Pisa/Tuscany	10/1985 (0.5%)*	NR	Positive only with ICT*; all tested negative by CLIA, Elisa, WB
Pati [13]	Blood donors	Survey	2020-2021	NR/All Italian regions	15/24,269 (0.04%)	NR	Survey conducted by the Italian National Blood Centre with near 89% of BEs response
Barbiero [16]	Pregnant women	Screening program	2012-2022	Florence/Tuscany	4/626 (0.6%)	NR	Test done on deliveries; 2 positive women (1 Bolivia, 1 Chile); no congenital transmission
Beltrami [17]	LA migrants	Cross-sectional	2017-2019	Milan/Lombardy	5/384 (1.3%)	El Salvador 5/384 (1.3%)	Only undocumented Salvadorans recruited
Sabaini [19]	Pregnant women	Screening study	2019-2022	Milan/Lombardy	5/280 (1.8%)	Bolivia 2/7 (28.6%) Brazil 1/26 (3.8%)	Ongoing study of screening for CD in 5 Gynecological unit in Milan; 6 newborns from positive mothers; no congenital transmission

LA, Latin American; NR, not reported; CD, Chagas disease; *ICT Chagas Quick Test (Cypress Diagnostics); CLIA, Chemiluminescent immunoassay; WB, western blot; Elisa, enzyme-linked immunosorbent assay; ICONA cohort, Italian Cohort of Antiretroviral-Naive patients; BEs, Blood Establishments.

should be considered is the risk of reactivation of CD among people living with HIV (PLWH) or those undergoing immunosuppression for transplantation [21]. To the best of our knowledge only one retrospective study performed on LA HIV-infected migrants enrolled in the Italian Cohort of Antiretroviral Naive (ICONA) patients have been done in Italy [15]. The study showed a 1.3% prevalence of subjects with confirmed positive serology for *T. cruzi* with an high rate of discordant results (3.34%). In conclusion, CD is an emerging neglected disease in Italy [22] and further studies are needed to better characterise this issue with important implications of public health.

Conflict of interest

None to declare.

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None to declare

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