Epidemiology of urogenital schistosomiasis observed in Parma (northern Italy), a non-endemic setting during a 14-year period (2002-2016)

Adriana Calderaro, Sabina Rossi, Maria Loretana Dell'Anna, Giovanna Piccolo, Federica Motta, Monica Martinelli, Mirko Buttrini, Sara Montecchini, Maria Cristina Arcangeletti, Maria Cristina Medici, Flora De Conto, Carlo Chezzi.

UNIVERSITÀ DI PARMA

Department of Medicine and Surgery, University of Parma, Italy.

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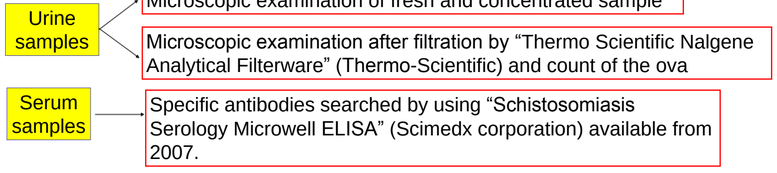
Introduction and purpose. Human urogenital schistosomiasis is an acute and chronic parasitic disease caused by the trematode worms *Schistosoma haematobium*. Transmission occurs when people suffering from schistosomiasis contaminate freshwater sources with their urine containing parasite eggs which hatch in water. People become infected when larval forms of the parasite - released by freshwater snails - penetrate the skin during contact with infested water. The classic sign of urogenital schistosomiasis is haematuria. Fibrosis of the bladder and ureter, and kidney damage are sometimes diagnosed in advanced cases. Bladder cancer is another possible evolution in the later stages, such as infertility; the schistosomiasis is also considered to be a risk factor for HIV infection, especially in women. The geographical distribution of urogenital schistosomiasis is related to Africa, the Middle East and Corsica (France). In the last years, the migration flows toward Italy, mainly from developing countries of Africa and South-Eastern Asia, are increasing, from about 66,000 people accepted in 2014 to about 176,000 in 2016 and 175,000 in the first 2 months of 2017, partially due to migrants landing in our coasts. The countries of origin declared at the time of the landing in the period 1 January-2 March 2017 were mainly Guinea (16%), Nigeria (12%), Ivory Coast (12%), Bangladesh (10%), Gambia (9%) and Senegal (9%). In this study we report the epidemiology of urogenital schistosomiasis observed in Parma (Northern Italy), a non-endemic setting, during a 14-year period (2002-2016).

Methods. From July 2002 to November 2016, 508 samples (338 urine and 170 sera) belonging to 409 subjects with suspicion of urinary schistosomiasis and/or eosinophilia were submitted to standard diagnostic procedures, as reported in Scheme 1. For 99 subjects both urine and serum samples were collected. Among the 409 subjects, 31 were Italians visiting endemic areas, 304 were foreigners (255 from Africa, 42 from the Middle East, 4 from South East Asia, 3 from Philippines), and 74 were with unknown origin or travels.

Scheme 1.



Results. Among urine samples, 52 (prevalence 15.4%) were positive for the presence of *Schistosoma haematobium* ova. Among serum samples 63 (prevalence 37.1%) were positive for the presence of *Schistosoma haematobium* antibodies. The distribution, the results of the analysis performed on urines and sera, and the prevalence of positive samples per year are reported in Figure 1 and 2, respectively. The distributions of positive samples in the study period and the origin/visiting area of patients (100) are reported in Figure 3.

Conclusions. Although the prevalence of parasitic infections is higher in developing countries, intestinal parasitoses are now increasingly diagnosed also in industrialized ones. This trend can be attributed to various factors such as increased travels to the developing countries, the intensive immigration flows and the important phenomenon of international child adoption. In this study, we reported the increasing number of cases of urogenital schistosomiasis in a non-endemic setting observed during a 14-year period (2002-2016) related to the increase of the rate of immigration in our city, which may reflect what is happening in our country. In particular, while the prevalence of sera positive for the presence of *Schistosoma haematobium* antibodies was considerably increased from 2014 until today, the prevalence of urines positive for the presence of *Schistosoma haematobium* ova is fluctuating: nevertheless, the absolute number of patients subjected to such analysis is exponentially increased and, as a consequence, both the urine and serum samples positive are increased.

References. 1) www.who.int; 2) Italian Ministry of Interiors: www.interno.gov.it; 3) Calderaro A, Montecchini S, Rossi S, Gorrini C, De Conto F, Medici MC, Chezzi C, Arcangeletti MC. Intestinal parasitoses in a tertiary-care hospital located in a non-endemic setting during 2006–2010. BMC Infect Dis, 2014; 14:264; 4) Masucci L, Graffeo R, Bani S, Bugli F, Boccia S, Nicolotti N, et al. Intestinal parasites isolated in a large teaching hospital, Italy, 1 May 2006 to 31 December 2008. Euro Surveill, 2011; 16(24):pii=19891

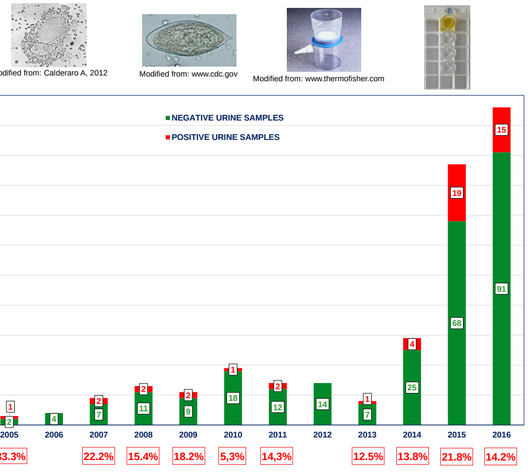


Figure 1. Urine samples per year analysed in the study period and prevalence of infection (%)/year

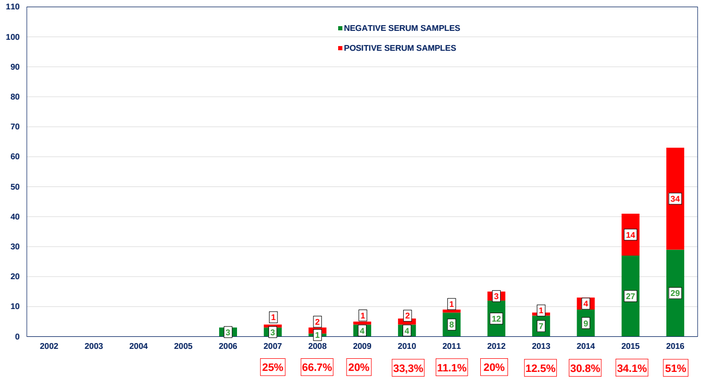


Figure 2. Serum samples per year analysed in the study period and prevalence of infection (%)/year

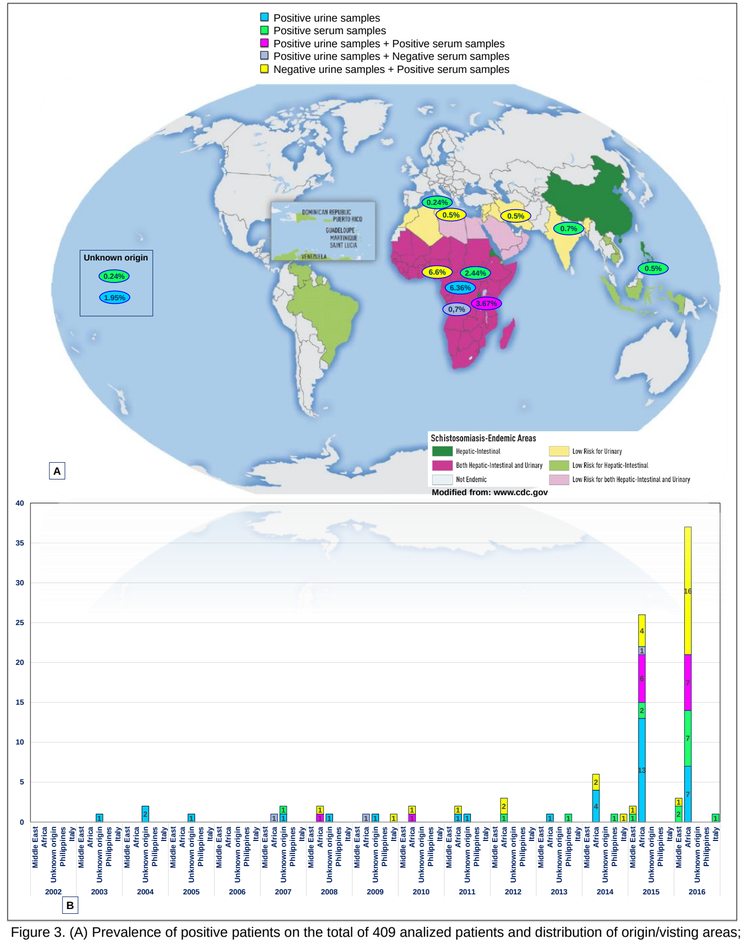


Figure 3. (A) Prevalence of positive patients on the total of 409 analized patients and distribution of origin/visting areas; (B) Positive samples (100) per year and origin/visiting area of patients (for 1 patient, associated to the year 2015, serum was collected at the end of 2015 and urine at the beginning of 2016).