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Import of schistosomiasis from endemic areas by soldiers and migrants

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Background: Schistosomiasis is a tropical parasitic disease caused by the parasites *S. haematobium*, *S. mansoni*, *S. intercalatum*, *S. japonicum* and *S. mekongi* with a complex transmission cycle involving fresh water snails. With the exemption of a few autochthonous cases from Corsica, transmission in Europe is virtually absent. The disease should be considered after travels to endemic areas with subsequent persisting eosinophilia in the peripheral blood. Next to leisure traveling to endemic areas with associated swimming in open fresh water like lakes or rivers, especially migrants and soldiers returning from tropical deployments are at risk of infections with *Schistosoma* spp. Here we assessed the risk for deployed German soldiers and migrants coming to Germany.

Material/methods: Returned soldiers from tropical deployments in endemic areas are routinely assessed by serology for schistosomiasis at the Department of Tropical Medicine at the Bernhard Nocht Institute, Bundeswehr Hospital Hamburg, 8-12 weeks after their deployments. Further, a well established PCR-based screening for *Schistosoma* spp. (targeting the species *S. mansoni*, *S. haematobium*, and *S. intercalatum*) was applied to stool samples of 150 migrants coming to Germany between September 2014 and December 2015.

Results: Within an assessment period of 10 years, a total of 24 out of 348 (6.9%) assessed returned soldiers showed positive serological results indicating schistosomiasis (deployment sites: Sudan n=9, Mali n=9, Nigeria n=2, Brazil n=1, Senegal n=1, multiple African destinations n=1, multiple destinations worldwide n=1), an additional 15 out of 348 (4.3%) showed weakly positive results with questionable specificity (deployment sites: Mali n=6, Sudan n=3, Djibouti n=2, Nigeria n=2, multiple African destinations n=1, multiple destinations worldwide n=1). Among the 150 assessed migrants, 12 (8%) were tested positive by PCR from stool. Assessed by country of origin, positive results were found for 9 out of 14 (64.3%) migrants from Eritrea and 2 out of 3 (66.7%) migrants from Guinea. Of note, also 1 out of 78 (1.3%) migrants from Afghanistan showed a positive result, suggesting an infection on the trip.

Conclusions: Although schistosomiasis in German soldiers is still a rare event, consequent screening allows for the identification and treatment of individual cases after exposure in tropical settings to prevent chronic courses of the disease. For migrants coming to Europe, the infestation rates largely depend on the region of origin with considerable infestation rates in migrants from high-endemicity settings. Of note, occasional infection events can be observed in migrants from non-endemic settings as well in case of transit through endemic areas.