Red blood cells’ auto-agglutination as an indicator test in human trypanosomiasis

F. Noireau*, A. Toudic† and J. L. Frezil‡

*Laboratoire de Biologie des Populations, Université Paris 12, 94010 Créteil Cedex, France; †ORSTOM, BP 181, Brazzaville, RP Congo and ‡ORTSTOM, BP 5045, 34032 Montpellier Cedex 1, France

Summary
Spontaneous red blood cells’ auto-agglutination was assessed as an indicator for the diagnosis of human African trypanosomiasis. This test is easily carried out by health workers with minimum qualification. It presents a high sensitivity (0.91) and a high predictive value of a negative result (0.99). Although a positive result gives a low indication of infection, the health care workers should refer the patient to a screening centre.

Materials and methods
The sensitivity of red blood cells’ auto-agglutination was assessed on 100 patients with parasitologically-confirmed trypanosomiasis (group 1). The test was also carried out on 170 randomly selected subjects (group 2), before conducting serological and parasitological examinations. These subjects lived in an endemic region, in which the prevalence of sleeping-sickness has been estimated at 3% (Noireau et al. 1987). A wet film of capillary blood was made under a cover glass and examined immediately after collection under...
agglutination, giving the estimated sensitivity of the test as 0.91. In group 2, four patients were detected by serological tests, of whom only one was confirmed parasitologically. All four patients presented red cells' auto-agglutination. This was also observed in 16 of the 166 subjects without trypanosomiasis. Overall, for the subjects in group 2, the specificity of the test was 0.90. Predictive values for this test, calculated by Bayes' theorem based on the rate of local endemicity of trypanosomiasis, were estimated at 0.99 (predictive value of a negative result) and 0.21 (predictive value of a positive result).

Several authors reported that red cells' auto-agglutination is observed frequently in subjects without sleeping sickness (Todd 1910; Dubois 1912). The specificity of the test can however be increased if only the markedly positive agglutination reactions are taken into account. Although this study was carried out on a small number of subjects, it has demonstrated the high sensitivity of the test. In addition, the auto-agglutination test presents a high predictive value of a negative result in trypanosomiasis foci of moderate prevalence. This enables the absence of auto-agglutination to be considered as a valid indicator of non-infection. This simple test could be carried out as a preliminary examination by health workers in deprived areas, in order to exclude with near certainty the possibility of sleeping sickness. Although a positive result does not enable a diagnosis to be made, it indicates that the suspect should be referred to qualified medical workers capable of carrying out serological and parasitological examinations.

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References


Dutton, Todd & Christy (1904) *Gland Puncture in Trypanosomiasis*. Memoir XVI of the Liverpool School of Tropical Medicine.


