PUBLICATION REPORT

94-30226

THE EFFICACY OF EXAMINING THREE SUCCESSIVE URINE SAMPLES IN THE EPIDEMIOLOGIC STUDY OF URINARY SCHISTOSOMIASIS

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# The Efficacy of Examining three Successive Urine Samples in the Epidemiologic study of Urinary Schistosomiasis

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Journal of Tropical Medicine

Royal Society of Tropical Medicine & Hygiene
"Egyptian branch"

Tager Building, 1, Ozoris Street, Garden City, Cairo, Egypt. Tel.: 3541857
Legalized No. 3605

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Abstract

This study evaluated the efficacy of examining three successive urine specimens using Bell's technique in the diagnosis of Schistosoma haematobium infection in endemic areas in Fayoum Governorate, Egypt. Generally, there was an increase in the percent of positivity by examining the second and the 3rd. urine specimens in these study groups. The results showed an increase of 36% in the prevalence of infection when three urine specimens were examined instead of one.

This study emphasized the need of repeated urine sample examinations in the epidemiological studies and control programs of urinary schistosomiasis.

Introduction

Schistosoma haematobium causes great morbidity and has an impact on the individuals' productivity in endemic areas in Egypt (Abdel-Wahab et al., 1992). The parasitological diagnosis of urinary schistosomiasis either in the epidemiological or in the control program studies depends upon the detection of characteristic eggs in urine specimens. Urine filtration with filter paper, nucleopore or Nuclepore filters has become the World Health Organization's recommended method for quantitative and qualitative diagnosis of S. haematobium infections in control programs. Several studies have evaluated the efficacy of the different types of filters used in the diagnosis of urinary schistosomiasis (Klumpp and Southgate, 1986 and Mshinda et al., 1989).

The present study evaluated the efficacy of examining three successive daily urine samples obtained from people in three rural communities in Fayoum Governorate Egypt where schistosomiasis haematobia is endemic.

Materials and Methods

A total of 2085 urine samples obtained from 695 male individuals aged 18 to 40 years participated in this study, 248, 262 and 185 individuals from 3 villages in Fayoum Governorate: Kahk, Mosharak Bahari and Mosharak Kebly, respectively. Urine specimens were collected between 9:00 a.m. and 2:00 p.m., in 50 ml. screw cap plastic centrifuge tubes containing 0.05 gm. Sodium azide was used as preservative (Mansour et al., 1981). They were processed and examined using Bell's
technique, (1964).

Results

Results showed an increase in the percent of positivity by examining the second and the third urine specimens for each group of individuals in the three villages (table -1). The percent of positivity was 39%, 29% and 44% after a single urine examination, compared to 79%, 67% and 74% positivity, respectively, after examining three urine specimens. It is worth mentioning that some positive cases in the first sample examination became negative in the second and third sample examination. Moreover, when three urine examinations instead of one were performed for every individual, an increase of 36% in the prevalence of infection was detected.

Discussion

This work has demonstrated that the epidemiological study of S. haematobium in endemic areas cannot depend on a single urine examination and that for an accurate evaluation of all infected individuals, especially those with very low intensities (from 1 to 3 S. haematobium egg/10 ml.), repeated examination of urine specimens is required. A similar conclusion was reached by Thomson et al., (1984) who, in ruling out intestinal protozoa and helminthic infection, stressed the need for repeated stool examination. Moreover, the authors recommend that to increase the reliability of a single urine examination for the detection of urinary schistosomiasis, the addition of immunologic diagnosis, whether through the detection of specific antibodies or antigens of S. haematobium, should be explored.

Acknowledgement

This work was supported by the U.S. Naval Medical Research and Development Command, Bethesda, MD, Work Unit No. 3M161102BS13. AK. 311. The opinions and assertions contained herein are the private ones of the authors and are not be construed as official or reflecting the views of the Navy Department, Department of Defense, the U.S. Government or the Egyptian Government.

Table -1: The relationship between the number of urine samples examined and the infection rate in three villages in Fayoum Governorate.

<table>
<thead>
<tr>
<th>Villages</th>
<th>Number of individuals</th>
<th>1 Urine sample</th>
<th>2 Urine samples</th>
<th>3 Urine samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>+</td>
<td>%</td>
<td>+</td>
</tr>
<tr>
<td>Kahk</td>
<td>248</td>
<td>97</td>
<td>39</td>
<td>149</td>
</tr>
<tr>
<td>Mosharak Bahari</td>
<td>262</td>
<td>75</td>
<td>29</td>
<td>117</td>
</tr>
<tr>
<td>Mosharak Kebly</td>
<td>185</td>
<td>82</td>
<td>44</td>
<td>130</td>
</tr>
<tr>
<td>Total</td>
<td>695</td>
<td>254</td>
<td>37</td>
<td>396</td>
</tr>
</tbody>
</table>
References