

Large outbreak of amoebiasis in Tbilisi, Georgia, May - September 1998

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Introduction *Entamoeba histolytica* occurs world-wide and 12% of the world's population are estimated to be infected (3). Faeco-oral transmission of *E. histolytica* cysts is the most common route of infection, but outbreaks are rarely reported (2,4). About 10% of those infected are clinically symptomatic; among them up to 98% present with amoebic colitis, the remaining 2-20% present with extra-intestinal disease, most commonly with liver abscess (1,5,6). The case fatality ratio is reported to be 2% in adults and 26% in children (3).

In July 1998, the health authorities in the city of Tbilisi reported an increase of *Entamoeba histolytica* infections among the 1.7 million inhabitants.

Material and methods We performed an immediate assessment of the outbreak to describe the extent of the outbreak and to provide recommendations for control measures to be taken. Most of the information was obtained by reviewing local official records. Data on the residing population by district were obtained through the Georgian National Centre for Disease Control. Information about the sources and treatment of drinking water was obtained from the municipality, the local private water supply company and on site visits. Filtered drinking water samples taken from several previous affected areas, after control measures had been implemented, were taken by local authorities and tested by culture and PCR at the Istituto Superiore di Sanità in Rome, Italy.

Results Between 25 May and 3 September a total of 106 cases of liver abscess and 71 cases of intestinal amoebiasis presented at the 4 city hospitals (overall cumulative attack rate 11 / 100,000). Liver abscesses occurred mainly among males (87%). The mean age of these cases was 49 years and four of them died (case fatality ratio 3.7%). Cases of intestinal amoebiasis were nearly equally distributed among both sexes, with a mean age of 40 years.

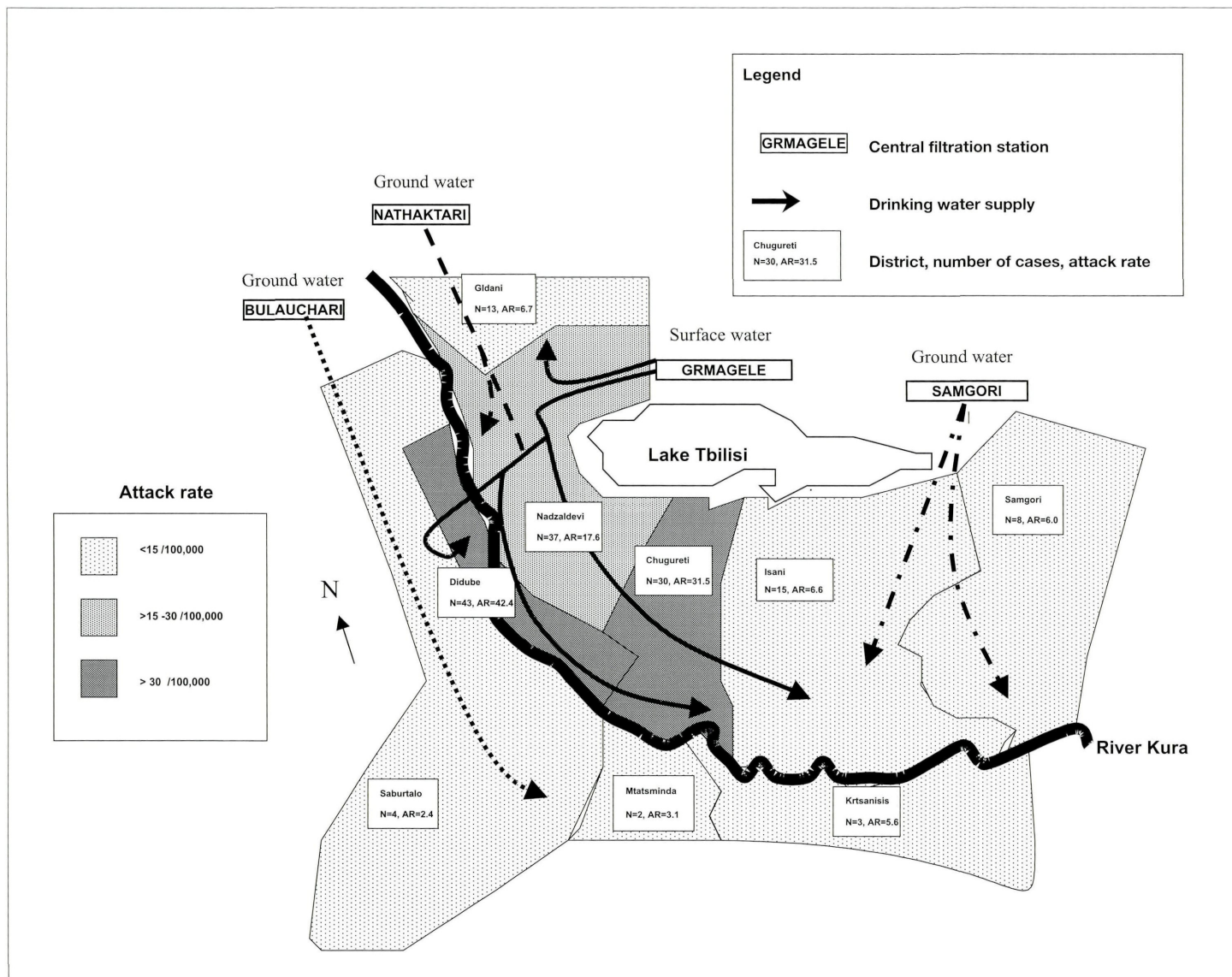


Figure 1:
Map of Tbilisi, attack rate by district and drinking water supply

Epidemiological investigation revealed that attack rates in the various districts of Tbilisi ranged from 3 to 42 per 100,000. They were highest in the district close to one water treatment plant filtration station and decreased with distance from it. This filtration station was the only one of the city to be supplied by surface water from a lake. At this station, filters were of low quality and routine maintenance was not documented.

Control measures were implemented at the plant on 23 August. These consisted of an increase of dosage of Aluminium sulfate for coagulation, filters were thoroughly cleaned, increased chlorination and increased duration of back-washing of filters. Furthermore, the population had been advised to boil water before drinking. The number of cases started to decrease at the second half of September.

Discussion All pre- and post-treatment water specimens tested negative for amoeba cysts and *E. coli*, but these samples had been obtained only after the control measures were taken at the water treatment works. The most likely explanation for the outbreak is that sewage contamination entered the potable water supply. Treatment processes should be rigorously applied and documented, and water quality monitored against agreed standards if we are to minimise the risk of such large-scale infections.

Further reports from the local authorities in Georgia have shown that the incidence has decreased but cases are still occurring. In June 1999, 35 new cases of intestinal amoebiasis and 13 cases of liver abscess were notified. An increased risk of acquiring Amoebiasis in Tbilisi, Georgia is likely to be present for several years and amoebiasis should be considered in travellers from Georgia.

Summary In Tbilisi, Georgia, a total of 177 cases of amoebiasis were reported between June and September 1998; 60% of them suffered from liver abscess. Cases of intestinal form were equally distributed among both sexes, liver abscess was more common among males. The mean age of case with intestinal form was 40 years and four cases with liver abscess 49 years. The cumulative attack rate was as high as 42/100,000 in certain districts and was following the drinking water supply. Control measures like decrease of filtration speed and increase of chlorination are likely to have reduced transmission. One year later, in June 1999, 35 cases of intestinal form and 13 cases of liver abscess were reported. An increased risk for acquiring amoebiasis in Georgia is likely to be present for the next years and amoebiasis should be considered among travellers from Georgia.

Key words Intestinal amoebiasis, outbreak, amoebic liver abscess.

Zusammenfassung *Amöbiasis-Ausbruch in Tiflis, Georgien, Mai – September 1998*

In Tiflis, Georgien, wurden zwischen Juni und September 1998 insgesamt 177 Fälle von Amoebiasis gemeldet, 60% davon hatten einen Leberabszess. Während bei intestinaler Form beide Geschlechter gleich häufig vertreten waren, wurde Leberabszess vorwiegend bei Männern beobachtet. Das mittlere Alter der Fälle von intestinaler Form war 40 Jahre, bei Fällen mit Leberabszess 49 Jahre. Die „cumulative attack rate“ erreichte 42/100.000 in einigen Distrikten und folgte der Trinkwasserversorgung. Kontrollmaßnahmen wie Verringerung der Filtrationsgeschwindigkeit und Erhöhung der Residualkonzentration von Chlor führten zum Rückgang der Neuerkrankungen. Ein Jahr später im Juni 1999 wurden immerhin noch 35 Fälle von intestinaler Form und 13 Fälle von Leberabszess gemeldet. In Tiflis ist daher weiterhin mit einem erhöhten Amoebiasisrisiko zu rechnen. Dies sollte bei der Untersuchung von Reisenden aus Georgien berücksichtigt werden.

Schlüsselwörter Intestinale Amoebiasis, Ausbruch, Amöbenleberabszess.

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