Case report

Giardiasis in a 16-day-old neonate

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Introduction

Neonatal giardiasis is very rare. The disease usually occurs following ingestion of contaminated water. This is a report of giardiasis in a 16-day-old male from Fars province, southern Islamic Republic of Iran, a hyperendemic region for the disease. The disease occurred 2 weeks after ingestion of unboiled water.

Case presentation

A 16-day-old male presented with watery diarrhoea of 2 days duration. He passed a yellow-greenish stool 7 to 8 times a day. The baby had been born by normal vaginal delivery, had a birth weight of 3300 g and had been breastfed since birth. There was no history of any prenatal problem with the pregnancy. The baby was meconium-stained at birth. For treating the light jaundice he had developed when he was 2 days old, his mother, based on a popular belief, gave him a herbal medication, common jujube (*Ziziphus jujuba*) dissolved in unboiled tap water several times. Two weeks later, when he was 16 days old, the baby developed diarrhoea. There was no associated vomiting, dehydration, convulsion or fever. Wet mount stool examination revealed many giardia cysts. The patient was given metronidazole, 5 mg/kg, 3 times a day, for 7 days. He recovered quickly and his stool examination was negative on three occasions.

Discussion

Giardia lamblia, a flagellated intestinal protozoan found throughout the world, is one of the most common causes of endemic and epidemic diarrhoea worldwide [*1*]. It is the most frequently identified etiological agent in water-borne outbreaks of diarrhoea [*1,2*]. It also contributes to chronic diarrhoea in both industrialized and developing countries. In developing countries, giardia is among the first intestinal pathogens to infect infants [*1,2*].

To be infected with *G. lamblia*, its cyst must be ingested. Although this usually occurs following ingestion of contaminated water, person-to-person and food-borne transmission are increasingly reported [*2*]. Surface water can easily become contaminated by human or animal sources. Giardia cysts survive well in the environment, particularly in cold water. Common to most water-borne outbreaks has been the use of untreated surface water or water treated by a faulty purification system or by inadequate chlorination.

Person-to-person transmission is now the second most commonly identified mode of acquisition and occurs in people with poor faecal-oral hygiene, such as small children in day care centres, who

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have a prevalence rate of giardia cyst passage of 20% to 50% [2].

Gastrointestinal secretory IgA antibodies perhaps play an important role in eradication of the trophozoites [3]. Human milk may also play a role in host protection against giardia [4]. Both human and animal breast milk has been found to contain anti-giardia antibodies. It has been shown that lack of breastfeeding is a significant risk factor for first giardia infection at all ages [5]. The amount of anti-giardia secretory IgA in human milk is associated with prevention of symptoms of diarrhoea due to giardia, but not with acquisition of the organism [4].

After ingestion of *G. lamblia* cysts, there is an incubation period of 1 to 2 weeks before the symptoms appear [2]. The time from ingestion of cysts to their detection in the stool may be even longer than the incubation period. Thus, a stool examination at the time the symptoms start might well be negative [2]. A low infecting dose of as few as 10 to 25 cysts is reported to be sufficient to cause human infection [6]. There are few reports in the medical literature on neonatal giardiasis [7].

In the southern part of the Islamic Republic of Iran, a hyperendemic region for giardiasis, the infection is most commonly water-borne [8]. In our case, the patient was given common jujube dissolved in unboiled water for treating his light jaundice.

Common jujube (*Z. jujuba*) is a plant native to Asia and southern Europe [9]. The ripe fruit of this plant has been used as a herbal remedy since ancient times. In China, it is used as a taste enhancer, and it is believed that it has several valuable medicinal properties. It is recommended for treating fatigue, loss of appetite and diarrhoea. In the Eastern Mediterranean Region, jujube has been prescribed for treating wounds, fever, ophthalmic diseases and asthma [9]. Moreover, it is believed that jujube enhances the immune response. However, to date, no scientifically important effect or side-effect of the herb in human has been reported [9].

Two weeks after drinking of unboiled water (i.e. incubation period of giardiasis) the disease became clearly evident in our patient. WHO recommends exclusive breastfeeding of neonates for the first few months of life. This policy is especially recommended in developing countries, where some water-borne infectious diseases are more prevalent. Although the baby was breastfed, it seems that the anti-giardia IgA secreted in breast milk could not prevent the disease.

Water brought to boil for 10 minutes can be considered free of viable giardia trophozoites or cysts [2]. In regions where giardiasis is hyperendemic, giardia, although not common, may be the etiology of neonatal diarrhoea, especially if there is a history of unboiled water consumption. In these regions, neonates should not be given water at all, unless it is brought to boil for at least 10 minutes or even more at higher altitudes.

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