Giardiasis in Sweden

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Human giardiasis.

Sweden has a systematic surveillance system for *Giardia* since it is the cause a notifiable disease. Consequently, national statistics is publicly available from official web pages of the Swedish Institute for Infectious Disease Control. For the year 2005 there were 12.7 reported cases per 100 000 population and during the last ten years the peak was 1997 with 26.4 cases per 100 000 population. The majority of cases reported have been infected outside Sweden. During the 7 year period 1997-2003 a total of 1112 Giardia infections were diagnosed in Swedes returning from a European country [1]. The risk of giardiasis was highest in Russia with over 50 per 100 000 travellers and the lowest was in Norway (0.16/100 000) [1]. In a recent meta-analysis it was estimated that for each registered Giardia case it was expected to occur around 250 symptomatic cases that are unregistered [2]. In the same study it was estimated that the Giardia prevalence is 2.97% (2.64:3.31 95% confidence limit) in asymptomatic individuals. In individuals with gastroenteric symptoms the prevalence was estimated to 5.81% (5.34:6.30). Both of these estimates are for the populations of the Nordic countries and include Sweden, Denmark, Finland and Norway. In a 1-year prospective study in a Swedish clinic for infectious diseases *Giardia* was responsible for 2% infections among 851 adult patients seeking help for diarrhoea [3].

Molecular analysis of isolates associated with human infections in Sweden has so far identified Assemblages A and B of *Giardia duodenalis* (Svärd et al, unpublished).
Animal giardiasis

Only a few studies have been performed to estimate the prevalence of infection in animals. In a survey among Swedish dairy calves that included animals with diarrhoea as well as healthy animals, it was shown that 24% of the diseased animals (146) were infected by Giardia [4]. In total 270 samples were analysed from 75 herds and the herd prevalence was 51%. In sheep it was recently shown that 22% of investigated lambs and 68% of the flocks harboured the infection [5]. Giardia is occasionally found in routine diagnostics of samples from pet animals. The same is true for samples from wild and zoo animals. Species includes cats, dogs, moose etc. However, no official data on the prevalence among various animals are currently available. Molecular characterisation using PCR-RFLP and DNA sequencing has revealed that Assemblages A-F can be found among animals in Sweden (Lebbad et al, unpublished). Of particular interest are genotypes A and B which are also found in humans.

Occurrence of Giardia in the environment

Different types of water have been examined to date. Studies of greywater have been used for quantitative microbial risk assessment (QMRA) of a range waterborne pathogens including Giardia [6]. Studies have also included work on wastewater and sewage sludge treatment and reuse [7].

Waterborne and foodborne outbreaks

There has been one massively large waterborne outbreak in Sweden during the last 20 years [8]. The outbreak resulted from an overflow of sewage water into the drinking water system in a Swedish ski resort. Over 1400 cases of giardiasis were diagnosed by microscopy among the more than 3000 persons that were exposed to the contaminated water.
Specific regulations

Giardiasis is a notifiable disease in humans in Sweden but not in animals. The infectious agent is included in the list B of OIE (Office International des Epizooties).

References


