ACM/815

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

TOXOPLASMOSIS AND FOOD

Key issue

Information on the incidence of toxoplasmosis in the UK population and the risk of infection associated with food sources is sparse. Evidence suggests that infection of food producing animals (animals reared for meat) with the parasite *Toxoplasma gondii* may be common. Recent research, in the Netherlands and the US, has estimated that the disease burden due to toxoplasmosis may be more significant than previously thought and may be greater than several other foodborne pathogens due to the severity of the disease. The FSA therefore wishes to seek the view of the Committee on the significance of toxoplasmosis disease in the UK, the foodborne risks and whether there is a need for further investigation.

Background

1. Toxoplasmosis is caused by the parasite *Toxoplasma gondii,* which can infect a wide range of warm-blooded animals. Humans become infected by ingestion of *Toxoplasma* oocysts, excreted in cat faeces, or by eating raw/undercooked meat containing viable cysts from infected food animals.

2. Seroprevalence in humans and animals varies throughout the world depending on a number of factors including climate, hygiene conditions and feeding habits in different countries. Studies have shown up to a third of the UK adult population has evidence of infection[1]. However, the number of reported cases of toxoplasmosis is low[2], with an average of 117 laboratory confirmed cases each year between 1998 and 2005 in England and Wales. The Toxoplasma Reference Unit identifies an additional 300 – 500 cases each year in England and Wales through special investigations. Toxoplasmosis is not a notifiable disease in the UK (except in Scotland) and the discrepancy between estimated seroprevalence and reported cases is probably due to the fact that the vast majority of those infected are asymptomatic with the presentation and severity of infection dependant on when it occurs and the immune status of the patient.

3. Primary infection of immunocompetent individuals with *Toxoplasma* is asymptomatic in the majority of cases (80-90%). Cysts formed during primary infection can, however, remain latent and infection may be reactivated in the case of immunosuppression, potentially causing serious/fatal disease. Similarly, primary infection of immunocompromised individuals can be fatal. There is some recent evidence that primary infection in healthy individuals

may be a cause of uveitis (inflammation of the eye), due to the formation of eye lesions, in approximately 0.3% of infected individuals. However, there is little data on how often this occurs, therefore there is significant uncertainty associated with estimates of incidence.

4. When primary infection occurs during pregnancy, the organism may be transmitted to the foetus which can lead to spontaneous abortion or serious handicap in the newborn[3]. The number of cases of congenital toxoplasmosis reported in the UK is small (around 10-15 cases a year) but it is likely that less seriously affected cases may remain unreported.

5. Estimates of human infection attributed to food vary from 30–63 % in different countries but there is little robust data on the foodborne risks. Epidemiological studies have shown an association between eating raw or undercooked meat and toxoplasmosis infection in pregnant women[4]. Pigs, sheep, cattle, poultry and fish can all be infected and there may be a particular risk from poorly controlled cured and fermented meat products. There is little information on the tolerance of *Toxoplasma* to salting and fermentation, however, freezing at -20°C and heating to 70°C is lethal to the cysts. In addition, *Toxoplasma* oocysts shed by cats have considerable environmental resistance and can contaminate food and water. Salads and vegetables that are not washed thoroughly can therefore also be a source of infection.

6. Current Agency advice to pregnant women recommends observing good hygiene when handling and preparing meat and only eating meat that has been well cooked and is piping hot all the way through with no pink meat left. We also advise wearing gloves when gardening or changing cat litter, and washing hands afterwards.

7. Recent research estimating the levels and impact of foodborne disease in the US and the Netherlands suggests that the disease burden due to toxoplasmosis may be more significant than previously thought. A study in the Netherlands estimated that toxoplasmosis has the highest disease burden compared with seven other foodborne pathogens, noting that although *Toxoplasma gondii* is a rare cause of disease it is associated with severe illness and high case fatality ratios [5]. Similarly, research in the US estimated that 5 pathogens accounted for over 90% of food related deaths, with toxoplasmosis being the third most significant after *Salmonella* and *Listeria*. Of the known foodborne pathogens *Toxoplasma gondii* was estimated to be responsible for 20.7% of deaths attributable to foodborne transmission per year in the US [6].

Members are invited to:

- Review the current evidence on toxoplasmosis in humans and animals in the UK;
- Consider whether the evidence indicates a food safety issue that needs to be addressed and which food sources are likely to present a significant risk;

- Discuss what further investigations/surveillance may be necessary to obtain robust data on UK prevalence and foodborne sources of toxoplasmosis;
- Consider whether there is a need to revise current food safety advice;
- Suggest any other aspects that require consideration.

Secretariat
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