C52

PROPOSALS FOR SPECIFYING AREAS IN THE EUROPEAN UNION (EU) TO BE NON-ENDEMIC FOR TRICHINELLA

CHRISTIAN RING[1] and FRANS van KNAPEN[2]

[1] Veterinary University Hannover, Centre for Food Science, Dep. of Food hygiene and -microbiology, Germany
[2] University of Utrecht, Fac. of Veterinary Medicine, Dep. of the Science of Food of animal origin, Netherlands

Keywords: Trichinella free area - European Union

A working group nominated by the Scientific Veterinary Committee to advise the European Commission in questions of public health, has discussed in detail the scientific criteria under which derogations according to article 6 paragraph 2 of Directive 91/497 EEC may be permitted. This regulation describes conditions under which certain areas in the EU can be derogated from the obligation to investigate relevant food animals for trichinella.

1. Introduction

1.1 Epidemiological situation in Europe

In the past forty years clinical trichinellosis in man in Europe was caused by so called 'urban type' or 'familiar type' outbreaks due to the consumption of meat from non or not correctly inspected wild animals (mainly wild boars: Sus scrofa fera) or the newly recognized source of infection: horse meat. Outbreaks of domestic pig origin coming from industrialized exploitation are absent in EU countries. Wild boars are part of wild life and beyond control of man. The population of wild boars is increasing in large parts of (Southern) Europe. The horses, as far as known, originated from areas which are well recognized as endemic for trichinellosis in man and animals (Eastern Europe, United States, Canada, Mexico). Local differences exist throughout Europe with regard to the prevalence of trichinellosis in wild life. An increased risk has develloped from Eastern Europe since the opening of former borders in 1990.

1.2 Trichinella species (spp.)

In the last decade much information has been obtained on the relevant Trichinella species which are involved in human and animal trichinellosis. The old fashioned idea that Trichinella spiralis (sensu strictu) is the only species, has been abandoned. Largely we have to recognize in Europe: Trichinella spiralis (A, B, SF, F, D, GR, PL, E, S, NL), Trichinella nativa (SF, S) and Trichinella britovi (I, F, E). Trichinella spiralis is responsible for human clinical trichinellosis and its transmission routes include both domestic and sylvatic cycles. Trichinella britovi is less capable of infecting man or causing serious illness. Trichinella nativa is as dangerous for man as Trichinella spiralis. The infectivity for different animal hosts also varies. The transmission routes of Trichinella britovi and Trichinella nativa are exclusively found in sylvatic cycles. In this document, the term Trichinella spp. will be used whenever possible.

1.3 The international Commission on Trichinellosis (ICT) recognized in 1980 that none of the available procedures in meat inspection to prevent human trichinellosis is infallible. Therefore two pathways may be considered:

I. Control in endemic areas
1. Meat inspection of all individual carcasses by means of EC accepted methods (Directive 64/433 EEC, 77/96 EEC)
2. Meat inspection of all individual carcasses by means of EC accepted methods (Directive 92/45 EEC, implemented January 1994)

The methods are aimed at the prevention of clinical trichinellosis in man, **not** to exclude all infections in man.

II. Control in non-endemic areas

Control should be established by epidemiological investigation in wild life (to determine the force of infection from wild life towards pigs and or man). The main prerequesite is that the pigs are housed behind microbiological barriers and have no access to the environment or wild animals. Clinical trichinellosis in man is absent. It is in particular the second pathway which has become possible through the amendment of Dir. 91/497 EEC which required detailed attention of the working group.

2. Definitions and conditions

Wild life. All animals living independently nor taken care of by man, which may play a role in the transmission (epidemiology) of Trichinella species. It includes carnivorous and omnivorous (e.g. rodents, swine) animals. Indicator animal. Carnivorous or omnivorous animals which have a high position in the food chain. It includes predators and scavenging animals. Cannibalism plays an important role. In most parts of Western Europe the fox is the indicator animal of choice. However, depending on the local circumstances, other carnivores may replace that position, such as lynx and raccoon-dog in the northern territories of the EU, and ferrets or genets in the Iberian peninsula. Rats are more important in the transmission of Trichinella spiralis than mice, although in the sylvatic cycles micro mammals can also play a role. Area. Parts of the community territory. A member of the EU can apply for geographically defined areas in the country or the whole country to get the status non-endemic area. For practical reasons such an area is described in a certain number of square kilometers (km^2), where it is required that around a single pigfarm a theoretical square kilometer is used as minimum direct environment. Local conditions such as coast lines, rivers, mountainsides, artificial barriers et cetera may form boundaries. Endemic area. Areas where irregular outbreaks of human clinical trichinellosis are caused by consumption of meat produced in the region. Non-endemic area. Area where clinical trichinellosis, single cases or outbreaks, have not been observed in man due to the consumption of meat produced in the area in the past decade (10 years). No detectable Trichinella spp infections by means of EC accepted methods in the pig population may be reported in the last decade (10 years). This period

was chosen as the time passed for two complete pig generations. In wild life indicator animals such as foxes and rats do not harbour Trichinella spiralis infection, except in extremely low level, examined in the past decade. In Poland as an example for an endemic area approximately 0.35 % of investigated wild boars were positive for Trichinella spiralis in 1993. In a non-endemic area a registration and identification system is administered for all pigs. 'Trichinella free'. Absence of Trichinella species in an area is a theoretical condition because in wild life there will always be a natural maintenance of Trichinella species beyond control of man. Moreover low degree infections (< 0,01/gram) in domestic pigs can not be determined with the EC accepted direct methods.
Microbiological barriere. Condition of 'clean trichinella exploitation' in pig farming.
This is a set of measurements which are compulsory at the farm level:

- Architectural barriers avoiding the entrance of rodents or other synantropic animals in the pigsty and in the foodstore.
  Examples are: closed food silos, gratings with small (< 1 cm) openings in waste water tubes and airventilation, simple devices to prohibit rodents to climb walls et cetera.
- Admission of new animals in the farm only after serological examination for specific Trichinella antibodies, carried out after a 3-weeks quarantine or animals that originate directly from another Trichinella free farm.
- The quarantine pigsty has to be isolated from the other pigsties.
- No raw or not-properly heated swill or waste food containing meat may be present at the farm.
- No garbage dumps are present in the direct environment of the farm (1 km^2)

These measurements are normally part of a general hygienic programme in modern pig farming to exclude animal infections.
The recognition and certification of 'clean trichinella exploitation' is granted for a one year period by the government (meat) inspection authority. The certification is revoked if one or more of the above mentioned prerequisites fail.

3. **Control measures to maintain the non-endemic status**

Given the situation of a non-endemic area and pig farming behind microbiological barriers, taking into account the transmission risks of Trichinella spp, the following control measures have to be carried out using methods approved by EC legislation: Wild life. In Western Europe the fox is the important indicator animal. In a non-endemic area all foxes, killed on purpose or by traffic or other accidents shall be examined for trichinellosis by a government inspection service. According to local circumstances other indicator animals may replace fox. Animals for consumption (e.g. wild boars) must be examined on individual basis according to EC standards. Pigs from farms not-certified for 'clean trichinella exploitation' and ecological farms must be examined at slaughther on individual basis according to EC standards. Pigs from 'clean trichinella exploitation' are free for consumption without testing for trichinellosis. Horses for consumption must be examined on individual basis according to EC standards.

4. **Reporting and documentation**

Reports on human and animal trichinellosis are required on a yearly basis to the Commission in Brussels based on directive 92/117 EEC ('Zoonosis Dir.'). Reports on pig and horse trichinellosis as well as wild boar trichinellosis, mentioning also the total number of tested animals. Reports on fox (or other indicator animals) trichinellosis are mentioning the total number of foxes killed and examined together with a map of the non-endemic region indicating where the foxes originated (also the animals with negative results).
The responsible veterinary service for collecting these data will be nominated by the competent authority.

5. **Measurements in case of trichinellosis in man or animals**

Man. If a positive (confirmed) case of clinical trichinellosis is reported to the national authorities (notifiable disease) an epidemiological survey is compulsory to find out the origin of the infection (questionary). If possible, a biopsy containing the Trichinella spp is shipped to the international reference centre in Rome (ICT/OIE Trichinella Reference Centre, Laboratory of Parasitology, Istituto Superiore di Sanita, Viale Regina Elena 299, 00161, Rome, Italy, Tel. 39.6.4990.2304, Fax 39.6.4469.823) for typing the species. If an autochton infection is suspected a survey shall be established to localize the focus. Also when imported trichinella infection is diagnosed, this must be reported to the commission. Pigs. If an animal from a 'clean trichinella exploitation' farm is recognized as a causative source of infection the status of non-endemicity in the local area is immediately withdrawn. If clinical trichinellosis is caused by an animal of unknown origin, the status of non-endemicity of the whole area is immediately withdrawn. The infected meat found must be sent to the international reference center in Rome (see above) for further identification of the species. The member state in which the area is located shall inform the Commission in Brussels about their immediate measurements and epidemiological investigation. The commisison proposes if and when a status of non-endemicity is withdrawn or may be re-obtained depending on the information of the member state judged by a scientific working group. The Council decides according to the procedure laid down in Dir. 92/117 EEC. Wild life, conventional / ecological pigs and horses. It is anticipated that sylvatic animals examined in surveys or pigs and horses after official meat inspection may be found positive for Trichinella spp. at irregular intervalls. The absence of such findings in pigs and horses is indicative of a relative low endemicity in wild life. Indicator animals such as foxes may harbour T.spiralis infection in a very low level. The commission proposes if and when a status of non-endemicity is withdrawn or may be re-obtained depending on the information of the member state judged by a scientific working group.

Prof. Dr. Dr. Ch. Ring, Tierärztliche Hochschule Hannover, Zentrum für Lebensmittelwissenschaften, Abt. Lebensmittelhygiene und -mikrobiologie, Bischofsholer Damm 15, 30173 Hannover, Germany; Prof. Dr. F. van Knapen, University of Utrecht, Fac. of Veterinary Medicine, Dep. of the Science of Food of animal origin, Yalelaan, NL-3508 TD Utrecht, Netherlands