OCCURRENCE OF ANGUILLICOLA CRASSUS (NEMATODE, ANGUILLICOLIDAE) IN THE ICHKEUL LAKE (NORTHERN TUNISIA)

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Abstract

Investigations of fish parasites from the north of Tunisia revealed the presence of Anguillicola crassus in African waters. The nematodes were found in Ichkeul lake and in a river communicating with the lake, Oued Sejnane. The occurrence of A. crassus in fresh waters from Tunisia was discussed.

Introduction

Anguillicola crassus Kuwahara, Niimi et Itagaki, 1974, a nematode parasite of the swimbladder of the Japanese eel, was reported from Anguilla anguilla in several European countries (Neumann, 1985; Peters and Hartman, 1986; Belpaire et al., 1987; Canestri-Trotti, 1987; Koie, 1988 a and b; Mo and Stcien, 1994) and particularly, in the south of France, in Camargue area (Dupont and Petter, 1988) and in Languedocian lagoon of Mauguio (Benajiba, 1991). We report its presence, for the first time, on the same host in the northern Tunisian Lake Ichkeul.

Materials and methods

The eels studied Anguilla anguilla came from wild populations captured during the year 1994-1995, in different lakes of the north-east of Tunisia. (fight). Observations involved 344 specimens caught in Lake Ichkeul, 50 from the Lake Bizerte, 50 from Lake Ghar El Melh and 100 from Lake Tunis. We also examined some specimens from two rivers communicating with the Ichkeul

Figure 1. Location of Lake Ichkeul
lake: Cued Joumine (15 specimens) and Oued Sejnane (5 specimens).

Results
The eels from the lakes under marine influence (Bizerte, Ghar El Melh and Tunis) are not parasitised by A. crassus. On the other hand, in Lake Ichkeul, where salinity can reach 50% in autumn and 3% in spring (mean rate of 14 to 16%) and where temperatures vary from 29-30°C in summer to 8-10°C in winter (Nieri et al., 1992), of 344 specimens, 25 had 1 to 3 nematodes in their swimbladder. The eight A. crassus were found altogether. The global prevalence was 7.26%, the abundance 0.11 and the mean intensity 1.52.
The size of the eels was between 18 and 73 cm. However, the parasites was found only in specimens measuring from 23 to 68 cm with low abundances (0.05 to 0.16) and with a varying intensity of 1 to 2.

Monthly values of prevalence are relatively low. The highest rate was observed in February (17.6%). This prevalence was 12% in April and 10% in November. For the other months, it wavers between 7.8 and 5%. But, during June, July and August, no parasite was found on the 50 eels caught in these months.

A. crassus was also found in one eel caught in Oued Sejnane.

Discussion
The absence of A. crassus in lakes under marine influence such as Bizerte, Char El Melh and Tunis can be explained by the fact that the nematode's development cannot take place in an environment with a salinity similar to that of sea water.
The presence of this parasite on eels from the Ichkeul lake and from Cued Sejnane indicates favourable conditions for the progress of its biological cycle. It particularly implies the presence of an intermediate host, copepod, cyclopidae or ostracod (Petter et al., 1989; Bonneau et al., 1991) and, may be, the presence of paratenical fish hosts (Haenen and Van Banning, 1990) favouring the passage from an infecting stage to the final host.

However, the questions are where does the eel’s infection take place, in Oueds or in the lake, and how did the parasite get there?

It is a known fact that eels recruitment takes place after a transatlantic migration of glass eels (or elvers) when they reach coastal waters of Europe or northern Africa and they enter the continental waters where growth and feeding activity take place (Le-comte-Finiger, 1983 a and b) and where the infection probably occurs. Therefore, the hypothesis of accidental introduction through migrations of infested eels from the occidental Meditenean coasts, where A. crassus intensity is clearly increasing, seem unlikely.
The presence of this parasite in Lake Ichkeul and Cued Sejnane is believed to be the result of an accidental introduction, either during importation of fresh water fish from Europe when dams were stocked with fish, or with eels containing the adult nematode, or from intermediate or paratenical host carrying the infecting stage and eaten by eels. Indeed, three of the six Oueds feeding Lake Ichkeul have such dams. Joumine was opened in 1984, Ghezala in 1985 and Sejnane in 1994.

Environmental conditions (temperature and salinity) and the presence of the intermediate host allowed the nematode cycle development. The parasite could be in a phase of colonisation of new hosts populations.

References
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