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ARE TWO COINCIDENCES A PROOF? THE EUROPEAN ROE DEER (*CAPREOLUS CAPREOLUS*) IS A SUITABLE INTERMEDIATE HOST FOR *TAENIA SERIALIS*

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INTRODUCTION: Taeniids are multi-host parasites with an indirect life cycle that strictly depends on a predator-prey relationship. This is referred to as a multi-host trophically-transmitted parasite system, which involves mammalian species in both adult and larval stage. Parasites with a complex life cycle may exhibit different degrees of host-specificity at each life stage. To measure host-specificity it is not sufficient the number of the species that a parasite can infect but also the relatedness to each other. Trophically-transmitted parasites necessitate high predation rates assuring high transmission levels within the food chain. A generalist parasite that uses several intermediate host species has more likelihood to infect its definitive host if this feeds broadly among many prey species. Thus, knowing the host breadth at the different life cycle stage is a fundamental concept of the biology and epidemiology of these multi-host parasites.

MATERIALS AND METHODS: A free-ranging adult female European roe deer died after a fatal car crash in within Monti Sibillini National Park. The carcass was brought in to the IZSUM of Tolentino (MC), and necropsy was performed. Cyst-like lesions were recovered from the epicardial and the endocardial surfaces, and the intercostal muscles. Histological and molecular investigations were carried out for the cysts identification.

RESULTS AND CONCLUSIONS: M-PCR gave an amplicon referable to *Taenia* spp. (267 bp). Sanger sequencing showed 99% query cover, 1e-103 e-value, and 100% identity with *T. serialis*. Histology of the parasitized heart revealed the presence of a metacestode larval stage (coenurus) compatible with taeniid larval stage of *T. serialis*. A large and more tissue-compressing cyst, which contains a single protoscolex was observed, surrounded by dystrophic, vacuolated and compressed cardiomyocytes. No inflammatory cells were observed around the cyst that means, as for *E. multilocularis*, immune tolerance mediated by specialized regulatory T cells and related cytokines as IL-10 and TGF- β . Wildlife plays a prominent role in the *T. serialis* epidemiology. *T. serialis-coenurosis* is already diagnosed in lagomorphs, rodents, and several cases in primates rarely detected also in cats, sheep, and marsupials. Few diagnoses have been confirmed by using molecular analysis and no one by hystopathological approach. Thus, *T. serialis* may be more flexible in the selection of intermediate hosts than previously hypothesized. To our knowledge, few published articles report the presence of *T. serialis* either in definitive or intermediate hosts in Italy. The interesting finding we describe here is that in a relatively short period of time and close to each other, two roe deer were detected positive to *T. serialis-coenurosis* (Morandi et al., 2022. Int J Parasitol: Parasites Wildl, 17:110-13). Studies on the *T. serialis*-dynamic will be conducted. Wildlife surveillance is crucial to monitor for human and animal health as intermediate hosts breadth of critical taeniids may suddenly change.