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Main topic : One Health

Genetic variants of *Echinococcus granulosus sensu stricto* infecting sheep in Italy

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Cystic Echinococcosis (CE) is caused by the larval form of *Echinococcus granulosus sensu lato*. CE is considered an important public health concern and it was included by the World Health Organization (WHO) in a list of seven neglected zoonotic diseases requiring priority intervention. In Italy different epidemiological scenarios were reported depending on the geographical area and associated socio-economic main activities (1). Although in Northern Italy the occurrence of *E. granulosus sensu stricto* (s.s.) is considered sporadic, in the southern regions and, in particular, in Sardinia, CE prevalence reaches high levels (2). We analysed CE cysts collected from infected sheep from various areas of mainland Italy and the Sardinia island, with the main objective to investigate intergenotypic and intragenotypic variations of *E. granulosus* s.s. at national level. CE cysts were collected from slaughtered sheep following post mortem inspection at local abattoirs. Total genomic DNA was extracted from protoscoleces or germinal layers and amplification and sequencing of the partial mitochondrial gene *nad5* (3) were performed. A datasets of DNA sequences (n=128) obtained in this study were built for haplotype analysis based on a 670 bp fragment of the *nad5* region. Ninety-eight Italian isolates were identified as *E. granulosus* s.s. G1 genotype (76,6%) while the other 30 sequences were assigned to G3 genotype (23,4%). As shown in the network analysis, we identified 42 haplotypes including 23 non-previously described haplotypes. G1 genotype was composed of 31 haplotypes with one central haplotype, including sequences from Sardinia, Northern Italy and Central Italy, showing 100% homology with sequences from different countries (Europe, Southern America, Northern Africa, Central Asia and Oceania). G3 genotype was divided in 11 haplotypes with a most frequent haplotype including isolates (n= 12) from Sardinia, Northern Italy, Central Italy and Southern Italy. Further phylogenetic studies on *E. granulosus* s.s. could help to improve our knowledge of the parasite, including transmission dynamics and host specificity, and possibly to better define more effective control strategies against the disease.