

## Diagnostic performance of macroscopic examination for detection of hydatid cysts in slaughtered sheep

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Diagnosis of Cystic Echinococcosis (CE) in sheep is essentially based on necropsy findings. Clinical symptoms may be easily overlooked, while the use of immunological tests is still not recommended for intra vitam diagnosis. The present study aimed to assess the diagnostic performances of macroscopic examination for post mortem diagnosis of ovine Cystic Echinococcosis (CE). In absence of single and accurate test as gold standard, the results of multiple analytical tests could be combine to estimate the diagnostic performance, on the base of Bayesian statistical approach. For this purpose, livers and lungs were sampled from 102 sheep and examined by three different methods: macroscopic examination, hystopathology and PCR. Macroscopic examination consisted of direct observation, palpation and incision of organs. The presence of hydatid fluid, germinal layer and protoscolices were also evidenced to confirm the diagnosis of CE. Hydatid cysts were excised and examined with both hystopathological and molecular analysis. Hystology sections were stained with Hematoxylin-Eosin and PAS to evidence the presence of an outer PAS-positive acellular laminated layer with an inner cellular nucleated germinal layer, considered to be a suggestive pattern of metacestodes of the *Echinococcus*. PCR was performed to amplify the calreticulin gene for the detection of *E. granulosus sensu stricto*. Data from the three diagnostic methods were analyzed to evaluate the performance of macroscopic examination for CE diagnosis in terms of sensitivity (SE), specificity (SP), positive predictive value (PPV) and negative predictive value (NPV), using Latent Class Analysis model. Macroscopic examination showed a value of SE equal to 98.3 (95% CI, 93.3-99.8), SP equal to 98.8 (95% CI, 95.4-99.5), PPV of 97.7 (95% CI, 78.4-100), and NPV of 99.5 (95% CI, 96.6-100). Our results confirmed the excellent performances of this diagnosis method. The experimental design used in this work could be used for validation protocol in quality assurance system.