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Background

Alveolar echinococcosis (AE) is a zoonosis due to the larval stages (metacestode) of the tapeworm *Echinococcus multilocularis*. The foxes are enrolled in a sylvatic cycle as a definitive host. In humans (intermediate host) the metacestode of *E. multilocularis* proliferate in the liver and induce invasive hepatic lesions but also extra-hepatic lesions (pulmonary, cerebral, adrenal gland, splenic, bone, soft tissue,...).

The diagnosis is based on epidemiological data, clinical findings, serology, clinical imaging, histopathology and in some cases *E. multilocularis* specific PCR assay on tissue. Early multidisciplinary care is advised. The radical surgery (R0) followed by 2-year of albendazole is the rule.

Until now, Belgium has been considered as low-risk country for AE. However, it was recently demonstrated by necropsy series that up to 60% of the red foxes (*Vulpes vulpes*) may be infected by *E. multilocularis* in some parts of Southern Belgium (Fig 1). The first indigenous Belgian human AE cases were described in the early 2000's.

The aim of this study was to report the experience of the CHU Liege, Belgium, with AE management.

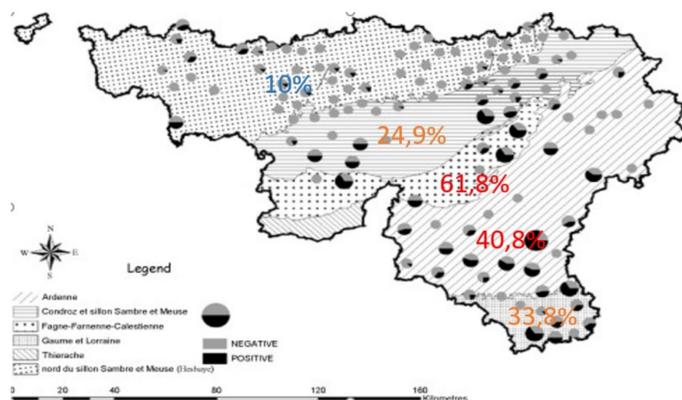


Figure 1: AE prevalence in red foxes demonstrated by necropsy series (Hanosset et al.)

Patients and Methods

The authors performed a retrospective study of AE cases managed between 1999 and 2017 at the CHU Sart-Tilman, University of Liège, Belgium. A total of 21 cases were identified.

We collected data from epidemiology findings, serology, and clinical imaging. The medical files were retrospectively reviewed.

The patients were classified into 3 groups (possible, probable and confirmed cases) according to the WHO- working group on Echinococcosis.

Results

Table I: Patients characteristics

Sex ratio and mean age at the diagnosis	2/3 are male, 69 years (range: 34-85y),
Degree of immunosuppression	38% of the patients (2 solid cancer, 2 hematological cancer, 1 chronic inflammatory disease, 3 chronic ethylism, 3 diabetes).
Risk factors	In all patients risk factors have been highlighted (having a dog and/or a cat, living in a rural zone, practicing outdoors activities, eating unwashed wild strawberries, working as farmer).

Clinical presentation

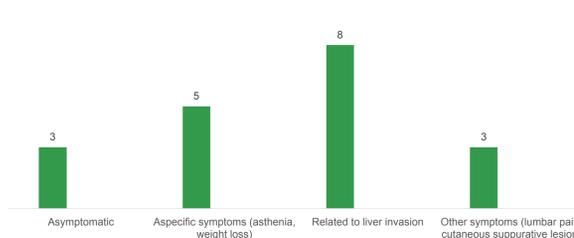


Table II: Lesions characteristics

Lesions	- Hepatic involvement in 20 cases (9 bilateral, 5 the right lobe and 6 the left lobe). Only 3 patients presented a lesion strictly intrahepatic.
PNM grading	Stage I: 3 patients, Stage IIb: 6 patients Stage IV: 11 patients.

Extra-hepatic lesions

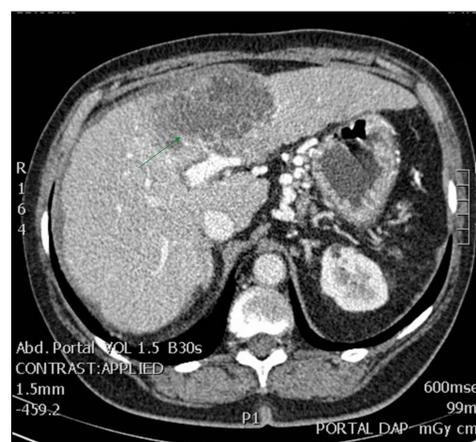
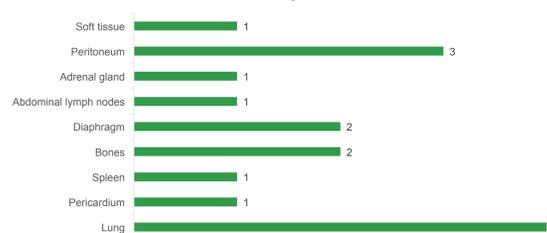


Table III: Treatment

Surgery	11 patients underwent R0 hepatic and extrahepatic surgical resections, followed by a two-year (or 6-month for one patient) albendazole treatment. The two-year albendazole have been stopped because of side effects for one case. 3 have an R2 surgery (inflammatory phlegmon, persistent pulmonary lesions, hepatic lesion followed by a long-term albendazole or mebendazole treatment).
Albendazole	7 patients have unresectable liver lesions and underwent albendazole palliative therapy. One patient has followed a 2-year albendazole treatment, the other one the albendazole was stopped because the patient was in palliative care.
Side effects	45% of the patients presented side effects of albendazole

Table IV: Evolution of patients

Evolution	5 patients died (3 died of AE, 2 for another reason).
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Figure 3: Distribution of indigenous AE human cases

Discussion

AE appears to be spreading in Belgium and has actually an uneven geographical distribution with endemicity in areas of Southern and Eastern Belgium. However, it is probable that local AE cases will be diagnosed in the whole country, considering that there is no reason that infected foxes remain in Southern Belgium and also the fact that some people from Northern Belgium might spend long period in Southern Belgium, with or without their dogs. The liver is the most frequently involved organ and the only cure can be achieved by complete R0 resection of all AE lesions. In reaction to this experience, the authors created a multidisciplinary group for AE diagnosis and management, including hepatologists, infectiologists, microbiologists, pathologists, radiologists, nuclear medicine specialists, surgeons and veterinarians. The authorities should be aware of this medical issue. A complete national survey should be encouraged, and **BASL** might have an important role in this study

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