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Poster Session II
Helminths

THE ROLE OF RECOMBINANT ANTIGENS IN THE SERODIAGNOSIS OF HUMAN CYSTIC ECHINOCOCCOSIS

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Objectives

The diagnosis of human cystic echinococcosis (CE) is based on imaging. Serological tests, still based on hydatid fluid (HCF) from animal cysts, are marred by poor sensitivity and specificity in certain contexts (presence of inactive cysts, high prevalence of other cestode infections). Serology is also of little use for follow-up of treated patients, due to the persistence of antibodies after cure. As recombinant antigens may represent an alternative to HCF, several recombinant molecules have been tested, but without taking into account important details such as cyst stage (as defined according to ultrasound classification issued by the WHO Informal Working Group on Echinococcosis- IWGE) and complications. Here, we present a study on two recombinant antigens that has included such clinical details.

Methods

Recombinant antigens derived from the parasite AgB (genotype G1) have been tested on extensive and well characterized sera panels from CE patients (1,500 sera) and patients with potentially cross-reactive parasitic diseases (cysticercosis, alveolar echinococcosis, others; 500 sera), and compared with the performance of the hydatid fluid in ELISA and immunochromatography for the detection of specific IgG. Clinical variables potentially influencing serological results (including cyst stage according to WHO IWGE) were statistically assessed.

Results

Preliminary results using the AgB-derived recombinant proteins show that these antigens detect active cysts with high sensitivity and specificity (>90%) and can assess outcome in patients on post-treatment follow-up showing a decline in specific antibodies in cured patients (i.e. with inactive, non-complicated cysts), but not in those with cysts unresponsive to treatment.

Conclusions

Further development of antigen candidates is needed before production of serological tests that could be implemented in clinical settings and marketed if valuable. This will be tackled in the frame of the EU-funded FP7 project "Human cystic echinococcosis research in central and eastern societies (HERACLES)', GA 602051. Our systematic approach within work package 2 of HERACLES includes: (i) building of biobanks with human and animal samples, (ii) clinical database and clinical protocols development, (iii) production and testing of recombinant antigens, (iv) development of a 'lab-on-a-chip' device for the serodiagnosis and follow-up. Our results and perspectives will be discussed.

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