

Is RTA a new potential option for the treatment of hydatid cysts?

July 24 2009

Current treatment of cystic echinococcosis is surgery or percutaneous aspiration, injection and reaspiration (PAIR) using hypertonic saline or ethanol. It is aimed at causing permanent damage to the endocyst - the thin, delicate, and translucent inner membrane that produces the cystic fluid and generates new larval elements able to expand the infestation. Surgery and PAIR on liver and lung can result in biliary or bronchial fistulae, prompted by endocyst detachment; chemical cholangitis or pneumonia, due to passing of hypertonic saline or ethanol into the biliary or bronchial tree; and infection or abscess on the residual cyst cavity.

A research article to be published on July 14, 2009 in the [World Journal of Gastroenterology](#) addresses a new, possible therapeutic approach to treating hydatid cysts as an alternative to surgery and PAIR.

Dr. Lamonaca and his group from the Mediterranean Institute for Transplantation and Advanced Therapies (ISMETT) in Palermo, Italy, experimented with the use of radiofrequency thermal ablation (RTA) to treat hydatid cysts. No controlled study of this kind has been reported in the literature. RTA is a technique that converts electric power passing through a needle placed in an organ tissue into released heat, which then causes tissue necrosis. This technique is currently used for treatment of neoplasms, primarily hepatocellular carcinoma.

The authors wanted to verify whether radiofrequency is able to warm and irreversibly damage hydatid cysts, causing cyst wall necrosis through a heat-related mechanism, and, secondly, whether the heat-related

coagulative necrosis of the cyst wall allows the parasitic endocyst to remain attached to the pericystium, unlike surgery or PAIR, which invariably causes endocyst detachment.

RTA was performed on 17 cysts (9 hepatic and 8 pulmonary), and was followed by pathology examination. Necrosis of the endocyst with a 100% success rate was seen in both hepatic (9/9) and lung cysts (8/8). A layer of host tissue necrosis outside the cyst, with average extension of 0.64 cm for liver, and 1.57 cm for lung, was also seen. The endocyst remained attached to the pericystium both in hepatic and lung cysts, with small and focal de novo detachment in just 3/9 hepatic cysts. Finally, after treatment, the authors found immediate volume reduction of the cysts of at least 65%.

The research was performed with internal funding at the Mediterranean Institute for Transplantation and Advanced Therapies (ISMETT) in Palermo, Italy thanks to a collaborative effort with the Veterinary Service of the Region of Sicily. ISMETT is a multi-organ transplant center founded in 1999 as a partnership between the Region of Sicily and the University of Pittsburgh Medical Center (UPMC). In this Italian center, located in the heart of the Mediterranean Basin, liver, kidney, heart, lung, pancreas and combined transplants, from both cadaveric and living donors, are performed. General cardiac surgery, abdominal surgery and interventional radiology procedures are also performed. Dr. Lamonaca, an infectious disease specialist, has been working at the institute as a consultant since 2001. Following up patients with hydatid disease of the liver treated with surgery or PAIR and presenting infective complications, the first author conceived this research as an attempt to identify a therapeutic alternative approach to surgery and PAIR, at least as effective as those techniques, but able to overcome their post-procedure complications.

This pilot study was performed on animal organs in order to be able to

verify the final effects of this new approach, very unlikely to be verified in treated patients. Since hydatidosis is a zoonosis endemic in Sicily, the authors decided to use organs from slaughtered animals, with minimal economic costs and no ethical implications.

Although the study was performed on explanted animal organs, the authors believe the results could have immediate and relevant implications for clinical management of patients with hydatid disease. When applied to humans this technique could have the following advantages: (1) RTA is able to warm and irreversibly damage hydatid cysts in a single section, since the entire cyst wall is made necrotic by a peculiar heat-related mechanism; (2) avoiding the use of chemical media, there is no risk of chemical cholangitis or pneumonia, so, unlike PAIR, the existence of cysto-biliary communication would no longer be a contraindication to percutaneous treatment of hydatid cysts; and (3) the persistence of endocyst attachment to the pericystium should help avoid, or greatly decrease, post-RTA fistula occurrence and consequent overlapping complications.

Finally, the results of this research seem to suggest that RTA could potentially be used to attempt treatment of other types of cystic lesions that require ablation; for example in the symptomatic treatment of cysts in polycystic disease; cystic neoplasms; pancreatic pseudocysts, etc. This, of course, would require in vivo study, but before using a new technique on humans, preliminary experimental data are needed.

More information: Lamonaca V, Virga A, Minervini MI, Di Stefano R, Provenzani A, Tagliareni P, Fleres G, Luca A, Vizzini G, Palazzo U, Gridelli B. Cystic echinococcosis of the liver and lung treated by radiofrequency thermal ablation: An ex-vivo pilot experimental study in animal models. *World J Gastroenterol* 2009; 15(26): 3232-3239
www.wjgnet.com/1007-9327/15/3232.asp

Source: World Journal of Gastroenterology ([news](#) : [web](#))

Citation: Is RTA a new potential option for the treatment of hydatid cysts? (2009, July 24)
retrieved 19 April 2024 from

<https://medicalxpress.com/news/2009-07-rta-potential-option-treatment-hydatid.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.