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PAIR: Puncture, Aspiration, Injection, Re-Aspiration

An option for the treatment of Cystic Echinococcosis

World Health Organization

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Surveillance and Response

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WHAT IS PAIR?

PAIR (***Puncture, Aspiration, Injection, Re-aspiration***), was proposed in 1986 by the Tunisian team that first used it in a prospective study. The technique was developed in the middle of 1980s for the treatment of intra-abdominal localizations of Cystic Echinococcosis (CE) infection by the larval cestode, *Echinococcus granulosus*, commonly called “hydatid disease”.

PAIR is a relatively recent and minimally invasive therapeutic option, that complements or replaces surgery which was long considered as the only treatment for CE. PAIR also complements chemotherapy with benzimidazoles, (albendazole and mebendazole) which have been developed since the beginning of the 1980s for the treatment of CE.

The safety and effectiveness of PAIR have been demonstrated in more than 2000 cases published in medical literature and from a worldwide collection of data presented at the Meeting of the WHO-Informal Working Group on Echinococcosis (WHO-IWGE) held during the XVIII International Congress of Hydatidology, Lisbon, November 1997; additional evidence has been presented by a number of teams at the XIX International Congress of Hydatidology, in San Carlos de Bariloche, Argentina, in September 1999 and in published international literature.

Basically, PAIR is percutaneous drainage of echinococcal cysts located in the abdomen. However, reports exist about the use of this treatment for cysts in the lung and extra-abdominal or extra-thoracic localizations. The drainage is performed with a fine needle or a catheter, followed by the killing of the protoscolices remaining in the cyst cavity by a protoscolicide agent. If a catheter is temporarily left in the cyst after the procedure for drainage (D), the acronym PAIRD should be preferred. If numerous and large daughter cysts are present, an alternative percutaneous technique “Percutaneous Puncture with Drainage and Curettage” (PPDC) may be used; however this latter technique should only be performed in surgical settings, using specified materials. PPDC is not described in this booklet. PAIR is performed under ultrasound (US), sometimes Computer Assisted Tomography (CT) guidance. It is feasible

in types CE1, CE2 and CE3 of the **WHO classification of Cystic Echinococcosis cysts**.¹ This proposed imaging classification scheme has evolved from a consensus between specialists in CE, after extended exchanges and discussion within a specific network on the “classification of CE cysts at US examination” of the WHO-IWGE. Its wide use should favour a better standardization of treatment indications and evaluation in the future.

¹ See Annex 1

THE USE OF PAIR IN THE TREATMENT OF CYSTIC ECHINOCOCCOSIS

PAIR IS CONSIDERED AN EFFECTIVE ALTERNATIVE TO SURGERY AND CHEMOTHERAPY.

Clinical experience including controlled trials confirms that PAIR is now a part of the expanded options for the treatment of CE. However, the use of PAIR as treatment must be discussed on a case by case basis whatever the setting and/or the country.

Guidelines for the treatment of CE including PAIR, have been proposed by the WHO-IWGE, and published in the Bulletin of the WHO, 1996, 74:213-242. Experience with PAIR by multiple groups in different countries has given more confidence in the efficacy and safety of the procedure, while it has also brought more insight into the precautions necessary to ensure the highest level of efficacy and safety. Consequently amendments to the recommendations published in the 1996 Guidelines have been included in this booklet.

Like any other therapeutic procedure PAIR requires clinical experience and technical skills. **It should be performed only by teams experienced in liver punctures under ultrasound (US) guidance, after specific training in this field.**

Contributors to the development of this document are available for consultation on the technique and/or for specific training; names and addresses are given in Annex 3 - Contributors.

INDICATIONS FOR PAIR

Patients with:

- Non-echoic lesion ≥ 5 cm in diameter (CE1m and I)
- Cysts with daughter cysts (CE2), and/or with detachment of membranes (CE3)
- Multiple cysts if accessible to puncture
- Infected cysts

Also

- Pregnant women
- Children >3 years old

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