NHS

National Institute for Clinical Excellence

Extracorporeal albumin dialysis for acute-on-chronic liver failure

Understanding NICE guidance – information for people considering the procedure, and for the public

February 2004

Extracorporeal albumin dialysis for acute-on-chronic liver failure
Understanding NICE guidance – information for people considering the procedure, and for the public

Issue date: February 2004

To order copies
Copies of this booklet can be ordered from the NHS Response Line; telephone 0870 1555 455 and quote reference number N0451. A version in Welsh and English is also available, reference number N0452. Mae fersiwn yn Gymraeg ac yn Saesneg ar gael hefyd, rhif cyfeirnod N0452. The NICE interventional procedures guidance on which this information is based is available from the NICE website (www.nice.org.uk). Copies can also be obtained from the NHS Response Line, reference number N0450.

National Institute for Clinical Excellence

MidCity Place
71 High Holborn
London
WC1V 6NA

Website: www.nice.org.uk

ISBN: 1-84257-528-7

Published by the National Institute for Clinical Excellence
February 2004
Typeset by Icon Design, Eton
Print on Demand

Contents

About this information

This information describes the guidance that the National Institute for Clinical Excellence (NICE) has issued to the NHS on a procedure called extracorporeal albumin dialysis. It is not a complete description of what is involved in the procedure – the patient's healthcare team should describe it in detail.

NICE has looked at whether extracorporeal albumin dialysis is safe enough and works well enough for it to be used routinely for the treatment of acute-on-chronic liver failure.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of extracorporeal albumin dialysis and how well it works
- asked experts for their opinion
- asked the views of the organisations that speak for the healthcare professionals and the patients and carers who will be affected by this guidance.

This guidance is part of NICE's work on 'interventional procedures' (see 'Further information' on page 10).

About extracorporeal albumin dialysis for acute-on-chronic liver failure

Normally, it's the liver that deals with toxins in the body. When liver failure happens and the liver stops working properly, toxins build up and cause problems. Usually, the person develops jaundice – the whites of the eyes go yellow and, if the jaundice is severe, the skin goes yellow too. The brain and blood system may also become affected.

Acute-on-chronic liver failure is the medical term for what happens when a person has long-term (chronic) liver failure and then on top of that has a sudden liver problem. In this situation, the person becomes seriously ill.

The aim of extracorporeal albumin dialysis is to remove toxins from the blood so that they don't build up. It is usually used to help a patient while they wait for a liver transplant. Or it can be used together with medicines for acute-on-chronic liver failure.

With extracorporeal albumin dialysis, the patient's blood is passed out of their body and into a machine. This removes toxins that are bound to a particular protein called albumin. The toxins are removed in such a way that the 'good' substances in the blood (such as hormones) are not affected.

How well it works

What the studies said

NICE looked at two trials of this procedure. The results from these seemed to show that patients who had extracorporeal albumin dialysis did better than those who did not. But the way that the trials were carried out meant that it wasn't possible to reach any real conclusions about how well the procedure worked.

Other reports said that between about a half and nearly three-quarters of patients who had extracorporeal albumin dialysis lived long enough to leave hospital.

Some studies showed that having extracorporeal albumin dialysis reduced the levels of some of the toxins and improved the brain problems linked with liver failure.

What the experts said

The experts said it was difficult to work out how well extracorporeal albumin dialysis worked. This was because it was difficult to show that it was the removal of the toxins that actually helped patients live for longer.

One expert said that more work needed to be done to find the group of patients that would be most likely to benefit from the procedure.

Risks and possible problems

What the studies said

In one trial, there were 17 problems reported in the 12 patients who had extracorporeal albumin dialysis. These included problems with blood clotting, fever and infection.

What the experts said

The experts commented that people with acute-on-chronic liver failure are critically ill, and the problems linked with this procedure were the same as they would be with any treatment for these patients. One expert said that if a patient already had problems with blood clotting, these could be made worse by the procedure.

What has NICE decided?

NICE has decided that, if a doctor wants to carry out extracorporeal albumin dialysis, he or she should make sure that the patient understands what is involved and that there are still uncertainties over the safety of the procedure and how well it works. There should be special arrangements in place so that the patient only agrees (consents) to the procedure after this discussion has taken place.

Other comments from NICE

NICE commented that there were problems with the studies it looked at. These made it difficult for NICE to reach firm conclusions about the safety of the procedure and how well it worked.

What the decision means for you

Your doctor may have offered you extracorporeal albumin dialysis. NICE has considered this procedure because it is relatively new. NICE has decided that there are uncertainties about the benefits and risks of extracorporeal albumin dialysis which you need to understand before you agree to it. Your doctor should discuss the benefits and risks with you. Some of these benefits and risks may be described above.

Further information

You have the right to be fully informed and to share in decision-making about the treatment you receive. You may want to discuss this guidance with the doctors and nurses looking after you.

You can visit the NICE website (www.nice.org.uk) for further information about the National Institute for Clinical Excellence and the Interventional Procedures Programme. A copy of the full guidance on extracorporeal albumin dialysis is on the NICE website (www.nice.org.uk/IPG045guidance), or you can order a copy from the website or by telephoning the NHS Response Line on 0870 1555 455 and quoting reference number N0450. The evidence that NICE considered in developing this guidance is also available from the NICE website.

If you want more information on liver problems, a good starting point is NHS Direct, telephone 0845 4647, or NHS Direct Online (www.nhsdirect.nhs.uk).

Date: February 2004

NHS

National Institute for
Clinical Excellence

**National Institute for
Clinical Excellence**

MidCity Place
71 High Holborn
London
WC1V 6NA

www.nice.org.uk

N0451s 1P POD Feb 04

Issue date: **February 2004**

NHS
National Institute for Clinical Excellence

Extracorporeal albumin dialysis for acute-on-chronic liver failure

1 Guidance

1.1 Current evidence on the safety and efficacy of extracorporeal albumin dialysis for acute-on-chronic liver failure (AoCLF) does not appear adequate for this procedure to be used without special arrangements for consent and for audit or research.

1.2 Clinicians wishing to undertake extracorporeal albumin dialysis for AoCLF should take the following action.

- Inform the clinical governance leads in their Trusts.
- Ensure that patients understand the uncertainty about the procedure's safety and efficacy and provide them with clear written information. Use of the Institute's *Information for the Public* is recommended.
- Audit and review clinical outcomes of all patients having extracorporeal albumin dialysis for AoCLF. Publication of safety and efficacy outcomes will be useful in reducing the current uncertainty. The Institute may review the procedure upon publication of further evidence.

2 The procedure

2.1 Indications

2.1.1 Liver failure is associated with the accumulation of toxins resulting from the loss of the detoxifying function of the liver. It is characterised by jaundice, circulatory changes, coagulation abnormalities and the presence of hepatic encephalopathy. Liver failure can occur as acute liver failure (in a previously healthy liver), AoCLF (where an acute problem coincides with pre-existing chronic liver insufficiency) or as chronic decompensation in end-stage liver disease.

2.1.2 There is a variety of treatment options for patients with advanced liver failure, including drugs and transplantation.

2.1.3 Extracorporeal albumin dialysis is a non-biological liver support system developed as a 'bridge' to transplantation or as an adjunct to standard medical therapy. It can also have a temporary supportive role following transplant or liver graft.

2.2 Outline of the procedure

2.2.1 This procedure is designed to selectively eliminate toxins bound to albumin in the blood of patients with AoCLF. The procedure works by circulating blood from the patient through a filter with a thin albumin-impregnated membrane and dialysing against an albumin-rich dialysate. Toxic molecules bound to albumin in the patient's blood are adsorbed on to the binding sites of albumin in the filter membrane and then pass through the membrane on to the binding sites of albumin in the dialysate. The dialysate is then passed through an activated charcoal column and an anion-exchange resin column (to remove bound toxins from albumin) and also through a conventional filter (to remove water-soluble toxins). The regenerated albumin can then be recirculated through the

Interventional Procedure Guidance 45

This guidance is written in the following context:
This guidance represents the view of the Institute which was arrived at after careful consideration of the available evidence. Health professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of health professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Interventional procedures guidance is for health professionals and people using the NHS in England, Wales and Scotland.

main dialyser. The maximum pore size of the main dialyser (50 kDa) does not allow larger molecules such as essential hormones bound to carrier proteins, growth factors or the patient's own albumin to be dialysed out.

2.3 Efficacy

2.3.1 Evidence from two randomised controlled trials suggested that extracorporeal dialysis improves survival in patients with AoCLF. However, both trials were stopped early and had a number of methodological limitations that prevented definitive conclusions being made about survival. Evidence from smaller case series reported survival rates between 56% and 70% at the time of hospital discharge. For more details, refer to the Sources of evidence (see below).

2.3.2 Studies reported improvements in hepatic encephalopathy grade and reductions in bilirubin and creatinine levels.

2.3.3 The Specialist Advisors highlighted the difficulty of evaluating the efficacy of this procedure. Although the procedure purifies the blood of albumin-bound toxins and reduces bilirubin levels, the Advisors noted that it is unclear whether this results in increased survival. One Advisor further commented that more clarity was needed about the patient group most likely to benefit from this procedure.

2.4 Safety

2.4.1 In a randomised controlled trial of 24 patients, 17 adverse events were noted in the 12 patients undergoing the procedure, including coagulopathy in three patients and fever or sepsis in two patients. For more details, refer to the Sources of evidence (see below).

2.4.2 The Specialist Advisors commented that complications associated with this procedure were the same as for any similar treatment in this critically ill patient population. One Advisor noted that thrombocytopenia (low platelet level) and coagulopathy could be exacerbated by the treatment.

2.5 Other comments

2.5.1 It was noted that the heterogeneity of the patients and the lack of clear selection criteria made assessment of safety and efficacy difficult.

Andrew Dillon
Chief Executive
February 2004

Information for the Public

NICE has produced information describing its guidance on this procedure for patients, carers and those with a wider interest in healthcare. It explains the nature of the procedure and the decision made, and has been written with patient consent in mind. This information is available, in English and Welsh, from www.nice.org.uk/IPG045publicinfo.

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

Interventional procedures overview for extracorporeal albumin dialysis for acute-on-chronic liver failure, April 2003

Available from: www.nice.org.uk/ip219overview

Ordering information
Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0450. *Information for the Public* can be obtained by quoting reference number N0451 for the English version and N0452 for a version in English and Welsh.

The distribution list for this guidance is available on the NICE website at URL www.nice.org.uk/IPG045distributionlist

Published by the National Institute for Clinical Excellence, February 2004 ISBN: 1-84257-527-9

National Institute for Clinical Excellence
MidCity Place, 71 High Holborn, London WC1V 6NA, website: www.nice.org.uk

N0450 1P 20k Feb 04 (ABA)