Survey of permanent central venous catheters for haemodialysis in the UK

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Abstract

**Background.** Venous catheter haemodialysis may be necessary in some patients without arterio venous fistulae on dialysis for end-stage renal failure. We conducted a survey to compare management of these catheters in different units in the UK.

**Methods.** Postal questionnaires were sent to nurses in charge of 81 renal units in the UK for a twelve month study period in 1994 to find out the type of catheter used, catheter after insertion care, the rate and management of exit site infections, and bacteraemia.

**Results.** (1) Total number of questionnaires returned 66 (81.5%). (2) 63.6% of renal units used double lumen Permcat catheters, 16.7% single lumen (Francis/Kimal, Gambro or Vascath), 10.6% use both double and single lumen catheters and 9.1% of renal units only use temporary polyurethane catheters. (3) Catheter exit site aseptic dressing technique was used in 84.8% of renal units, clean technique in 15.2%. 66.8% changed dressings at each dialysis session, 22.7% weekly. The majority of renal units (63.6%) had one nurse to change the dressing, used Betadine as a cleaning agent and Mepore to cover the exit site. (4) 75.8% did not know the exact incidence of episodes of sepsis and/or exit site infections. Fluocoxacin was the antibiotic of choice for each catheter related sepsis episode.

**Conclusion.** During this study period most renal units used Permcat as first choice for long term catheter dialysis, the after insertion care of which varied. The number of episodes of sepsis was unknown. We suggest UK collection of data for all long term catheters and related problems for audit purposes.

**Key words:** haemodialysis; central venous catheters; catheter exit site care

Introduction

The acceptance rate to renal replacement therapy programmes of patients with end-stage renal failure (ESRF) is increasing in the UK [1], in some areas (Wales) the number is as high as 100 new patients per million population per year. There are now over 5000 patients on haemodialysis either in hospital renal units or in their homes. The arterio venous fistula remains the vascular access of choice [2,3], however, in some renal units up to 60% of their patients will have had catheterization of their central veins for dialysis at some point during their treatment period.

We conducted a survey of the current practice in the UK of long term haemodialysis catheters, long term being defined as expected use life of the catheter for more than two months following insertion.

**Results**

Total number of replies 66 (81.5%).

**Type of catheter (Fig. 1)**

Some renal units used temporary catheters and were therefore excluded from further analysis.

**Dressing of catheter exit site (Tables 1 and 2)**

Fifty-six units (84.8%) changed dressing aseptically, 10–15% used a clean technique. Forty-two (63.6%) had one nurse per dressing and 14 (36.4%) had two nurses. Forty units (60.6%) changed dressings at each
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**QUESTIONNAIRE**

No. of Current Haemodialysis patients: ____________________________

No. of patients currently using permanent lines: ____________________________

- Which type of permanent line do you use?
  - a) Francis
  - b) Permocath
  - c) Hickman
  - d) Other (please specify)

- Which type of dressing do you use?
  - a) Primapore
  - b) Mepore
  - c) Bioclusive
  - d) Other (please specify)

- Which dressing technique do you use?
  - a) Aseptic
  - b) Clean
  - c) Other (please specify)

- How many nurses do each dressing procedure?

- Which cleaning agent do you use?
  - a) Betadine
  - b) Saline
  - c) Other (please specify)

- What is your frequency of dressing change?
  - a) each dialysis
  - b) weekly
  - c) Other (please specify)

- Exit Site Infection (ESI):
  - What is your definition:
    - a) Purulent discharge
    - b) More than 2 mm of redness around exit site
    - c) Both the above
    - d) Other (please specify)

  - What is your incidence:
    - a) No of ESI (per year)
    - b) No of septicaemia (per year)
    - c) Commonest Organism

  - Which treatment do you use?
    - Preferred antibiotic:
      - Oral
      - IV
      - Local spray

  - No. of ESI (per year):
  - No of septicaemia (per year):
  - Commonest Organism:

  - Route:

  - Oral
  - IV
  - Local spray

  - No. renal units

  - Table 1. Type of dressing for catheter exit site in different Renal Units.

  - Table 2. Name of catheter exit site cleaning agent.

  - No. renal units

  - Betadine 65%
  - Saline 13.4%
  - Betadine and Saline 3.3%
  - Chlorhexidine 8.3%
  - Betadine and Hibisol 5%
  - Chlorhexidine and Betadine 5%

  - dialysis session, 10 (16.7%) weekly, 2 (3.3%) twice weekly, 3 (5.0%) fortnightly and the rest as required.

  - Exit site infection (ESI) (Table 3)

  - The definition of ESI varied. Only 16 units (24.2%) knew the exact incidence of ESI and septicaemia. The question of treatment of septicaemia was not answered in the majority of cases.

  - Discussion

  - Insertion of long term haemodialysis catheters in patients with ESRF may be necessary in up to 60% of patients of each unit for two main reasons [4]:
  1. Failure of previously established arteriovenous fistulae.
  2. Non-availability of vascular access such as patients on CAPD without previous access construction or patients presenting as emergencies requiring haemodialysis within 24 to 48 h of admission. In this survey we have established variable management of long term catheter haemodialysis in the UK. Double lumen catheters are popular in renal units worldwide [4] to reduce recirculation rates during dialysis, however other studies [5] have showed favourable results with single lumen catheters. ESI and bacteraemia remain serious catheter related complications and are known to have led to deaths in other studies and yet 75.8% of the renal units did not have a record of these septic episodes. ESI were treated with oral flucloxacin in 10 units, cephalaxin in two, erythromycin in two
and one unit used a combination of flucloxacillin and rifampicin. More information about catheter related complications in the UK needs to be obtained from Medical Directors of these renal units.

We therefore suggest collection of data for the UK renal units (subject to the agreement of their Medical Directors) for all long term haemodialysis catheters to obtain further data on: (1) indication for catheter insertion; (2) location of catheter insertion; (3) technique of insertion; (4) technical survival of these catheters; (5) thrombotic complications and their management.

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References


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