

Scottish Parliament Region: North East Scotland

Case 200501291: Tayside NHS Board

Summary of Investigation

Category

Health: Hospital: Care and Treatment

Overview

Ms C complained about the care and treatment provided to her mother, Mrs A, in Ninewells Hospital (the hospital). Mrs A was admitted to the hospital to have a dialysis tube inserted but following the procedure a complication arose and Mrs A died.

Specific complaints and conclusions

The complaints which have been investigated are:

- (a) that the incorrect procedure was used (*not upheld*); and
- (b) failure to diagnose a complication (*upheld*).

Redress and recommendations

The Ombudsman recommends that the Board:

- (i) apologise to Ms C for the distress caused to her and the rest of Mrs A's family by failure to diagnose the complication; and
- (ii) ensure that staff on wards which receive patients who have undergone tunnellled line insertion are aware of the possibility of this known complication and can recognise the symptoms of perforation of a major blood vessel.

The Board have accepted the recommendations and have acted on them.

Main Investigation Report

Introduction

1. Mrs A was on haemodialysis treatment for kidney failure. She was admitted to the hospital on 23 December 2004 for insertion of a dialysis tube but sadly died following the procedure. Ms C complained to the Board on her own behalf and on behalf of her two sisters. The Director of Nursing and Patient Services responded but the family remained dissatisfied and asked for an Independent Review under the NHS complaints process then in place. The Review Panel Convener agreed that the response had not answered all of the questions raised in the original complaint and the matter was sent for further local resolution. On 29 June 2005 Ms C and her sisters met with the doctors involved with their mother's care but on 12 August 2005 Ms C complained to the Ombudsman. Ms C said that she wanted an independent body to look at the case so she and her sisters could be sure that everything was done correctly.

2. The complaints from Ms C which I have investigated are that:
- (a) the incorrect procedure was used; and
 - (b) there was failure to diagnose a complication.

This report contains some technical terms which are explained in the glossary of terms at Annex 2. In line with the practice of the Ombudsman's office, the standard by which I have judged the actions of the medical staff was whether they were reasonable. By that, I mean whether the decisions and actions taken were within the boundaries of what would be considered to be acceptable practice by the medical profession in terms of knowledge and practice at the time.

Investigation

3. In order to investigate this complaint I have had access to Mrs A's clinical records, the complaint correspondence, the post mortem report, the medical report prepared for the Procurator Fiscal, the Incident Root Cause Analysis Report¹ and the Clinical Standards Board for Scotland *Report on Adult Renal Services at Ninewells Renal Unit* (March 2003). I have obtained professional advice from an adviser to the Ombudsman (the Adviser) who is a Consultant

¹ A retrospective review of an incident undertaken in order to identify what, how, and why it happened

Physician and Nephrologist (an expert in kidney disease). I have not included in this report every detail investigated but I am satisfied that no matter of significance has been overlooked. Ms C and the Board were given an opportunity to comment on a draft of this report.

(a) The incorrect procedure was used

4. Mrs A suffered from chronic kidney failure and had been on long term haemodialysis for just over two years. On 21 December 2004 the arterio-venous fistula (a connection between an artery and a vein, usually in the arm, and used to perform dialysis) was found by nursing staff at the hospital's Renal Unit to have clotted. A temporary catheter was inserted in the right side of Mrs A's neck to allow her to have dialysis that day.

5. On 23 December 2004, Mrs A returned to the hospital's Radiology Department on an out-patient basis to have a tunnelled line inserted which could be used for some weeks until a further permanent access could be established. The procedure involved inserting a wire through the blood vessels and heart, removing the temporary catheter and fitting a more permanent tunnelled catheter.

6. The procedure was undertaken by a Specialist Renal Registrar (Registrar 1) but he was unable to place the guidewire in the correct place even after making a fresh attempt through a new puncture site. After several attempts he asked the Renal Consultant (the Consultant) for assistance. The catheter introducer was fed over the guidewire when the wire tip was thought to be in the right atrium (pumping chamber) of the heart. A subcutaneous tunnel for the catheter was then created, the guidewire withdrawn and the catheter was fed down into the introducer and stitched into place.

7. Mrs A was well at the start of the procedure. Her blood pressure was recorded as being between '160-170/60-70 mm Hg'. During the procedure, however, Mrs A complained of pain variably described in the records as 'sharp pleuritic pain', 'chest pain', 'throat pain' and 'back pain'. About 35 minutes after the start of the procedure Mrs A's blood pressure fell to 130/60 mm Hg then fell steeply to 65/40 mm Hg. Intravenous fluids and oxygen were administered and Mrs A's blood pressure rose to 110/55 mm Hg. Mrs A was then sent to the ward. On the ward Mrs A's blood pressure again fell to very low levels. Intravenous fluids failed to correct this and Mrs A suffered a cardiac arrest.

Resuscitation was started but Mrs A failed to respond to this and died at 12:35 on 23 December 2004.

8. Post mortem examination showed that Mrs A died of haemopericardium (leakage of blood into the pericardial sac surrounding the heart) caused by perforation of the blood vessel leading to the heart during the procedure to install the dialysis line.

9. Ms C said that the Board had been unable to explain how this had happened and why the perforation of the blood vessel was not seen when the procedure was being done under x-ray control. She asked for this to be investigated.

10. The Adviser said that Mrs A was totally dependent on haemodialysis. There was, therefore, a clear requirement to place the catheter to enable dialysis to continue. The Adviser said that Registrar 1 (who commenced the procedure) was sufficiently experienced to undertake it and when a problem arose he appropriately asked for help from a senior colleague, the Consultant.

11. The Adviser said that perforation of a major blood vessel is a rare but known complication of this procedure. The possibility of it occurring should be included in the description of the procedure and possible complications given to the patient at the time of obtaining consent. The Adviser noted that the patient information sheet produced by the Consultant in August 2005 does make it clear that the perforation of a blood vessel and even death can occur, though very rarely.

12. The Adviser reviewed Mrs A's complete medical file. He said he could find no evidence of poor practice. The Adviser said that perforation or the resultant bleeding may well not have been visible despite x-ray screening. The procedure was carried out correctly but difficulties were encountered in placing the catheter in the correct position and it perforated the blood vessel at the point where it entered the right atrium of the heart causing bleeding into the pericardial sac.

13. More generally, when the Clinical Standards Board for Scotland reported on adult renal services at the hospital's Renal Unit in March 2003 they noted that the introduction of a dedicated clinical radiology session for insertion of tunnelled lines had resulted in a reduction in infection rates (compared to the

use of temporary catheters). The Report also noted that the Unit had almost met the desirable target of having a minimum of 70% of patients having arteriovenous fistulae or vein graft as their permanent haemodialysis access.

(a) Conclusion

14. Mrs A had an arteriovenous fistula which is the optimal access for the dialysis on which her life depended. When it clotted Mrs A had a temporary access to allow her to have dialysis that day. Two days after this she underwent the procedure to have a tunnelled line inserted in order to allow her to continue to have dialysis but with a reduced risk of infection. The procedure was, therefore, clinically necessary. I accept the Adviser's advice that perforation of a blood vessel is a risk associated with the procedure, albeit a small one, and that it is quite possible for such a perforation not to be seen on x-ray. It is clear from the records that both Registrar 1 and the Consultant thought that the catheter was correctly placed when the procedure concluded. Although that turned out not to be the case there is no evidence that poor practice caused the catheter to perforate the blood vessel.

15. The procedure was carried out correctly but what happened was that a recognised, if rare, complication of carrying out the procedure occurred. The problem did not show up on x-ray during the procedure. It was reasonable for the doctors to assume that the procedure was satisfactory at that stage. The Adviser said that there was no indication of poor clinical practice, the Registrar involved the Consultant appropriately and the medical records were in order and did not indicate any problem. There is no evidence that the incorrect procedure was used and the Ombudsman hopes that the independent investigation of this matter will reassure the family and help them to come to terms with their loss. I do not uphold this complaint.

(b) There was failure to diagnose a complication

16. When Mrs A was sent to the renal ward she came under the care of a second Registrar (Registrar 2). Within 30 minutes of the last blood pressure recording in the Radiology Department, her blood pressure again fell dramatically to 65/40 mm Hg. An ECG showed no evidence of heart attack. An urgent echocardiogram was performed by the Cardiology Registrar. The hand written report of this investigation stated 'There is a moderate sized pericardial effusion. However, there is no evidence of tamponade' (compression of the heart chambers by fluid in the pericardial sac). Although Registrar 2 did not believe that Mrs A's collapse was due to pressure on the heart, he did suggest a

probable diagnosis of internal blood loss. He gave Mrs A more intravenous fluid and prepared for blood transfusion and CT scanning. Before this could be done, however, Mrs A suffered a cardiac arrest and could not be resuscitated. The cause of Mrs A's death was only discovered at post mortem.

17. Ms C complained that there was a failure to diagnose the complication and thought that perhaps her mother's life could have been saved had the perforation been found earlier.

18. The Adviser noted that blood was aspirated through the catheter at the end of the procedure and the catheter was, therefore, considered to be in the correct position. The Adviser said, however, that the aspiration of blood from the catheter at the end of the procedure was not concrete evidence that it was in the correct position. A catheter lying in a pericardial sac filled with blood would also have produced blood on aspiration.

19. The Adviser said that there had been difficulty and pain during the procedure. The fall in Mrs A's blood pressure was of a great magnitude, especially bearing in mind that she had slightly high blood pressure at the start of the procedure. The Adviser said that following exclusion by ECG of a heart attack, the possibility of vessel damage should have been considered more strongly and he was surprised that it was not. The echocardiogram revealed a moderate sized collection of fluid in the pericardial sac. The fact that tamponade was not evident:

- did not mean that significant bleeding outside the heart, as suggested by Registrar 2, was not occurring, and
- did not mean that compression of the heart could not have occurred later, i.e., blood may have continued to accumulate in the pericardial sac after the echocardiogram recorded a moderate sized collection.

20. The Adviser said that he did not believe that Mrs A's life could have been saved, however, even if the perforation had been discovered earlier. The Adviser said that to have saved her life would have required emergency surgical opening of the chest wall, relief of cardiac pressure (if any) and identification and closure of the site of the bleeding. It is highly unlikely that this surgical procedure could have been undertaken at all in the setting of a radiology department or general ward, let alone successfully.

(b) Conclusion

21. It is clear from the evidence that Mrs A's symptoms of pain during the procedure and dramatic fall in blood pressure immediately afterwards should have alerted medical staff to the possibility of a perforation of a major blood vessel. When it became clear that Mrs A was not suffering from a heart attack, which can produce similar symptoms, that should have made staff consider the possibility of perforation more likely. Although Registrar 2 did suggest the cause might be bleeding from elsewhere, the most likely cause (i.e. perforation) given the procedure which Mrs A had recently undergone was not considered. This complication was, therefore, not diagnosed. I accept the Adviser's opinion that once this had occurred it is unlikely that anything could have been done quickly enough to save Mrs A but I uphold the complaint that the complication was not diagnosed.

(b) Recommendation

22. The Ombudsman recommends that the Board:

- (i) apologise to Ms C for the distress caused to her and the rest of Mrs A's family by failure to diagnose the complication; and
- (ii) ensure that staff on wards which receive patients who have undergone tunnelled line insertion are aware of the possibility of this known complication and can recognise the symptoms of perforation of a major blood vessel.

23. The Board have accepted the recommendations and have acted on them.

18 July 2007

Explanation of abbreviations used

Ms C	The complainant
Mrs A	Ms C's mother
The Board	Tayside NHS Board
The Adviser	The Ombudsman's Independent Professional Adviser
Registrar 1	The Specialist Renal Registrar
The Consultant	The Renal Consultant
Registrar 2	The Registrar in charge of the ward

Glossary of terms

Arterio-venous fistula	A connection between an artery and a vein usually in the arm and used to perform dialysis
Catheter	A flexible tube
CT (computed tomography) scanning	A technique which uses a computer to assimilate multiple x-ray images into a single picture
ECG (electrocardiogram)	A recording of the electrical activity of the heart
Echocardiogram	A test which uses sound waves to image the heart
Haemodialysis	A treatment for kidney failure that removes wastes and water from the blood artificially
Haemopericardium	Leakage of blood into the pericardial sac surrounding the heart
Pericardial effusion	Blood in the pericardial sac
Pericardial sac	A tough fibrous membrane that envelops and protects the heart
Right atrium	The thin-walled chamber of the heart which pumps blood into the right ventricle
Subcutaneous	Under the skin
Tamponade	Compression of the heart chambers by fluid in the pericardial sac causing inadequate heart contractions