A report on the management of thoracic aortic aneurysms at the Cardiothoracic Centre – Liverpool and future requirements.

January 2002

A. Rashid MD FRCS (Eng)
Consultant Cardiac Surgeon

INTRODUCTION

There has been a significant improvement in the short and long term outcomes of most of thoracic and thoraco-abdominal aneurysm reconstructions in recent years. These improvements have come about by:

1. Centralisation of resources and management of thoracic and thoraco-abdominal aneurysms in a small number of dedicated centres.

2. Sub specialisation in the fields of surgery, anaesthesia and percutaneous interventions.

3. Realisation that the complex nature of these aneurysms demands an integrated team approach and also complete co-operation between the members of the team.

4. Technological advancement that has improved diagnosis, evaluation and overall management of these patients.

Centralisation, sub-specialisation and a team approach to the management of patients with thoracic and thoraco-abdominal aneurysms has had a major impact on the overall management of these patients and has made a significant improvement to the outcomes.

Background

We undertook an audit of the management of thoracic aortic aneurysms in recent years at the Cardiothoracic Centre. The study was conducted on two separate lines:

1 To ascertain the number of patients admitted with acute aortic dissection to the centre. The type of management received, survival and also long term outcome. This study was carried out by Dr. D. Lokko and Dr. N. Newall and included all admissions over a 6 year period from January 1994 to December 1999.

The findings revealed that the long-term results were unsatisfactory, in fact, the vast majority of survivals after operation for type A acute dissection were dead three years after operation, most likely due to lack of follow-up.

2. Audit of Surgery of Aneurysms of Thoracic and Thoraco-abdominal Aorta at the Cardiothoracic Centre over a 3 year period was carried out by Mr. Oo and myself. This revealed that there has been an improvement in the outcomes but this fell short of expectation.

The data were presented at the Audit Meeting on ..... and it was overwhelming opinion that there is certainly room for improvement.

Based on the years of observation and the knowledge of available resources, some of the following causes for under performance were identified:

a. Overall low volume of work, particularly per individual consultant.
b. Lack of team work.
c. Inadequate infra-structure.
d. Lack of introduction and integration of new ideas and new technology.
e. Lack of a dedicated aneurysm database.
f. Lack of data about incidents of various types of thoracic aneurysms of the aorta in the population we serve.

Action Taken

The following measures were implemented gradually over a period of the last 2 years in response to the specific problems mentioned above.

1. Introduction of a dedicated thoracic aneurysm clinic (TAAC).
   Originally one clinic per month. Since November 2001 it has increased to two clinics per month every other Wednesday mornings due to a significant increase in the number of referrals. These clinics are in addition to regular cardiac out-patient clinics and only patients with thoracic and thoraco-abdominal aneurysms are referred to the TAA clinic.

2. Establishment of a dedicated team for the management of these patients from diagnosis to follow-up.

3. Dedicated operating days for patients with aneurysms of the thoracic and thoraco-abdominal aorta which has reduced the waiting times for this group of patients significantly.

4. Close co-operation between CTC and the vascular department at the Royal Liverpool University Hospital for the management of the thoraco-abdominal aortic aneurysms.

5. Improving our skills and learning new ideas and techniques by attending dedicated centres and meetings dedicated to the management of aneurysms of the aorta.

6. Establishing a team representing cardiac and vascular surgery, anaesthesiology, cardiology and interventional radiology. Based on the philosophy of team work, utilising the expertise of individual members of the team in an integrated manner, has had a major impact on the outcomes and improved the results significantly.

What we have achieved so far

1. Close co-operation and consultation in all aspects of aneurysms of the aorta between CTC, vascular and interventional radiology service at the Royal, led by myself, Mr. Peter Harris and Dr. Gould, on the understanding that the CTC is dedicated and focused to provide a comprehensive service for the management of aneurysms of the thoracic aorta.

2. Continued joint management of patients with thoraco-abdominal aortic aneurysms. A dedicated team is in place for the management of aneurysms of aorta from diagnosis to indefinite follow-up. The team includes;
Mr. P. Harris, Dr. G. Russell, Dr. W.L. Morrison, Mr. Roberts, Mr. Fabri and myself.

3. A dedicated theatre day for operations on chronic aneurysms of the thoracic and thoraco-abdominal aorta (alternative Fridays).

4. Dedicated thoracic aortic aneurysm clinics (2 per month).

5. Establishing co-operation between other vascular units in the region and the Cardiothoracic Centre including Bangor led by Mr. Watkin.

6. Updating the vascular instruments necessary for carrying out operations on aneurysms of the aorta with active help and participation of the Theatre Superintendent (Sister Julie Simmons).

7. To familiarise ourselves with new technology and developments in the field of the management of these type of aneurysms, particularly percutaneous intervention and endo-vascular graft placement for this reason Dr. Morrison, Dr. Russell and myself attended a two day seminar at the vascular suite in Toulouse on ..... This seminar included lectures and presentations on the new developments in the field of endo-prosthesis, patient selection and live presentation of endo-graft placement.

On-going work

1. Design of a TAA database in collaboration with the audit department. I have undertaken to provide a report outlining the data required to be collected including comprehensive operation data. The audit department has undertaken to make the necessary arrangements for the design of the database. I expect to complete the work by the end of March 2002.

2. Ongoing work on the preparation and design of research projects including incidents of thoracic aortic aneurysms in the region. Dr. Mark Jackson has undertaken and been actively involved in the preparation and the design of the protocol.

3. Establishing co-operation and help in future training, particularly in the area of percutaneous interventions and placement of endovascular stent grafts with experienced British and other European Centres including Centres in Marseilles, Toulousse and Sheffield.

4. We are in the process of establishing percutaneous interventions including endovascular graft placements at the centre. Arrangements are in place for close supervision and training until adequate experience is gained. Our aim is to provide a comprehensive service for the management of thoracic and thoraco-abdominal aneurysms.

Essential requirements

1. The centre requires a dedicated theatre/lab for:

    a. Percutaneous vascular intervention (PVI) such as placement of endovascular stent grafts, calibrated aortography and embolisation.
    b. Operations on all types of aneurysm of the thoracic and thoraco-abdominal aorta.

This facility can be utilised for placement of thoracic stents.

2. The theatre lab should be spacious to house a C arm and also to accommodate all the other equipment necessary for complex procedures to perform on patients with aneurysms of the aortic arch and thoraco-abdominal aorta.

    Theatre 4 fulfils this criteria. It was planned and built as a dedicated theatre to house a C arm and it also fulfils the safety criteria set by the Radiation Protection Board.

    I have discussed this matter with Dr. Hilary Fewins, Dr. Cynthia Sampson and Dr. Derek Gould. They are in complete agreement with the plan and participation in the project.

3. MR scanning is essential for the follow-up of patients, particularly young patients with Marfan's syndrome. I have discussed this matter with Dr. Cynthia Sampson and Dr. Hilary Fewins who believe that a plan is in place for MR scanner to be stationed on the Broadgreen site. It seems our centre is required to provide cardiac and vascular software. Further discussion is necessary with the Radiology Department to obtain the necessary information, particularly with regard to timing and implementation of this plan.

4. In order to speed up communication and transmission of scanned data between various departments which are involved in the management of these patients, particularly the department of radiology and surgery, an up to date work-station is required on the CT scanner site, and placing or upgrading the computers in theatre 4, TAA clinic and necessary offices. The Radiology Department believes a Leonardo Siemens workstation is best suited for the job.

5. In order to develop the service further and meet the demand, a knowledge of various types of thoracic aortic aneurysms within the population we serve, is necessary. A project is underway with financial support from Liverpool Football Club and active participation of the audit department.

Participants

The programme which was outlined on previous pages, on the expansion of aneurysm services and improvement in the outcome over the last 2 years could not occur without the help and participation of the team of experts from:

Department of Surgery (Mr. Fabri, Mr. Pullan, Mr. Harris).

Department of Anaesthesia (Dr. Russell, Dr. Thomas, Dr. Murphy).

Department of Cardiology (Dr. Morrison).

Department of Radiology (Dr. Fewins, Dr. Gould, Dr. Sampson).

Perfusion service (Mr. Chris Roberts).

Nursing staff led by Mrs. Cleary and Sister Simmons and the dedicated work of all the staff at the Cardiothoracic Centre.

Recently the media generously named this centre 'world class'. We claim and believe at present the services match any other nationally. With the expertise and dedication of the above named team, we have the potential to provide a world class service for the management of thoracic and thoraco-abdominal aneurysms in the future at the Cardiothoracic Centre Liverpool.

Based on my previous discussions I believe this plan of action is supported by Dr. Charles Hind (Medical Director) and Mr. Mike Bone (Chief Executive). I seek support of the board of management for the continuous implementation of this plan and to provide financial means, particularly to theatre and the X-ray department to fulfil the above mentioned requirements.

On behalf of the Thoracic and Thoraco-abdominal Aneurysm Service at the CTC.

A. Rashid MD FRCS (Eng)