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- Les éditoriaux sont sollicités par la Rédaction, et n'excèdent pas 6 pages, références comprises, et limitées à 10.
- Les faits cliniques et les notes de technique ne doivent pas dépasser 6 pages, références non comprises mais limitées à 15.
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The first page of the manuscript must comprise the title of the article, the initial ones of the first names and the names of the authors, the denomination and the complete address of the institution in which work was carried out, titles and teaching hospital affiliations of each author, the complete address with fax and telephone number of the author, who must be sent the correspondence.

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ANNALES 1^{ER} SEMESTRE 2012

**ANNALES AFRICAINES DE CHIRURGIE THORACIQUE ET
CARDIO-VASCULAIRE
AFRICAN ANNALS OF THORACIC AND CARDIO-VASCULAR SURGERY**

Volume 7 Numéro 1, 2012

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CHIRURGIE CARDIAQUE / CARDIAC SURGERY

HOW TO DO IT : CLOSED MITRAL COMMISSUROTOMY

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Introduction

Closed mitral commissurotomy (CMC) for mitral stenosis has been performed since 1923 after the successful work of Cutler and Levin, followed by Souttar in 1925(1, 2). At our centre, we have been performing closed mitral commissurotomy since 1962. In the present era of percutaneous mitral balloon valvotomy (PMBV), we perform more than 100 CMC's per year due to a large waiting list and decreased cost. Our current technique of CMC, modified over many years, is described.

Technique

Selection of patient with a classical diastolic rumble with a sharp opening snap on auscultation, and a Wilkins's score (Table 1) of <8 is considered essential to a good outcome(3). Relative contraindications include the presence of left atrial clot, or previous embolic episodes. If the patient is anticoagulated then warfarin is discontinued at least 48 hours prior to surgery.

The patient is intubated under general anesthesia with a single lumen endotracheal tube and positioned in a semi-lateral position with a small sand bag placed behind the left shoulder and the left arm placed anteriorly above the head with the support of sandbags(Fig 1). Intravenous access is gained by placing a venous catheter in the right arm. An arterial line is placed in the right radial artery to monitor arterial pressure. The patient is prepped with anti-septic betadine solution from the left axilla to the subcostal space along the

anterior axillary line and one inch to the right of midline anteriorly to the spine over the left hemithorax.

A left anterolateral curvilinear skin incision of 8-10cms is made over the 5th intercostal space up to the subcutaneous plane. In women, a sub-mammary incision is selected 1 cm below the mammary fold. After raising the subcutaneous flap the apical heart beat is sought anteriorly, and the intercostal space where the apex beat is palpated is selected for entering the chest cavity. This is usually the 5th intercostal space. A rib spreader with the ratchet placed posteriorly is used, and the pleural space entered. Care is taken to avoid injury to the left internal mammary artery anteriorly which may be injured due to excessive rib spreading. The left lung is packed laterally with a large moist pad or sponge to expose the pericardium medially, and the pericardium is picked between forceps and opened 1 cm anterior to the phrenic nerve. The pericardium is opened enough to expose the apex of the heart inferiorly and the pulmonary artery superiorly. The pericardium is marsupialized to the skin with 2-3 silk stay sutures on both sides. Occasionally the left thymus gland or fat pad may need to be resected to allow better exposure superiorly. The pulmonary artery pressure is felt by digital palpation as a rough guide to compare with the post commissurotomy pulmonary artery pressure. The left atrial appendage (LAA) is palpated gently to feel for clot. If felt or suspected, then 3 approaches can be made: Firstly, after the

purse string is placed the appendage is opened and the clot extracted with increased sustained respiratory inhalation prior to placing the index finger. Secondly, a pursestring suture can be placed in the body of the left atrium. Thirdly, the entry can be made through the left superior pulmonary vein if it is large enough.

If the left ventricle (LV) apex is not visualized a moist gauze pack is placed below the heart along the intra-diaphragmatic pericardium. Using a 2-0 Ethibond (Ethicon, Somerville, New Jersey, USA) braided polyester suture a Ustitch purse string is made over a bare area at the apex of the heart on the left ventricular side lateral to the left anterior descending coronary artery (Fig 2). Another 2-0 Ethibond braided polyester suture purse string is placed around the base of the left atrial appendage. A Statinsky vascular side biting clamp is placed at the base of the appendage (Fig 3). Care is taken not to apply the clamp over the A-V groove, thus avoiding injury to the circumflex coronary artery.

The left atrial appendage is opened using a #11 blade and any clot or particulate matter are thoroughly washed out. The surgeon prepares his right index finger by washing with antiseptic solution. The Tubb's dilator is checked and is set at 2.5 cms. diameter. It is important to have three sizes of Tubb's dilator available i.e. adult, medium, and pediatric, and selection depending on the patient's LV heart size (Fig. 4). It is essential that the Tubb's dilator shoulder be completely within the left ventricular cavity when the Tubb's dilator engages the leaflet, and the commissurotomy is performed.

While the assistant holds the two lips of the left atrial appendage wall, the surgeon introduces the right index finger into the LA and removes the clamp with his left hand. It is stressed to gently insert the finger making sure pectinate muscle is not obstructing the orifice. A tear in the LAA can create a major problem. The tip of the index finger then identifies the mitral valve orifice and size, as well as the presence of nodules, calcium, and any mitral regurgitation jet. The surgeon then attempts to break the stenosis by finger, and generally this gives an adequate finger split. The index finger should not occlude the orifice for more than a few ventricular beats.

The other three fingers of his right hand are used to elevate the left ventricle and stabilize the apex. Using the left hand and a #11 blade scalpel the LV apex is stabbed and a small Hegar dilator or blunt end of the scalpel is introduced through the stab wound. In cases of critical mitral stenosis a Hegar dilator is advanced through the LV and into the LA and the mitral orifice is enlarged. Care

is taken that the mitral orifice is not occluded for a long time at any point of time by the finger, the Hegar dilator, or the Tubb's dilator.

Once the Hegar dilator is employed it is removed and the Tubb's dilator is introduced into the LV with the handle towards the superior aspect and rotated so the handle lies in a horizontal plane and the tip of the dilator is gently guided through the mitral valve orifice (Fig 5). It is important that the shoulder of the Tubb's dilator be fully inside the LV cavity and the dilator not held within the chordae of the mitral valve apparatus. The anesthetist is cautioned, and both carotids are felt and compressed briefly when the split is made. The split is made against the valve leaflets and not against the commissures (Fig 6). The slit should be fully in a slow but forceful motion. If required, the split is repeated with increasing the Tubb's dilator size by adjusting the screw, and an additional 3cm. split is performed. Progressive splits from lower to higher openings are not routinely done. The Tubb's dilator is removed after the arms are closed and the first assistant immediately secures the purse string. If the suture breaks or there is a LV tear then a Hegar dilator is placed through the tear to control bleeding and a pledgeted horizontal mattress suture placed to secure the bleeding. Next, the finger in the LA is removed and LA purse string is secured. Digital palpation of pulmonary artery pressures are again made to compare with the pre-split status. The anesthetist may be able to appreciate more lung compliance and decreased airway pressure after an adequate split.

Following adequate hemostasis, a 32 French intercostal drain is placed through a separate lower left chest stab wound incision. The pericardial cavity is irrigated with saline and the pericardium approximated with a separate cruciate pericardial window fashioned posterior to the left phrenic nerve.

An intercostal nerve block is given for two ribs above and two ribs below the incision and the wound is closed in layers. The patient is generally extubated in the operating room. The patient is usually discharged on the 3rd or 4th postoperative day. A transthoracic echocardiogram (TTE) is obtained prior to discharge and on clinic return in 3-4 weeks.

Discussion

Since 1948 a number of series have been reported with excellent long term results from closed mitral commissurotomy (CMC) (4, 5). Several recent monographs have described the contemporary operative technique of CMC (6, 7, 8). Despite the advantages and satisfactory

long term results of the interventional PMBV, CMC remains a low risk, inexpensive approach, not requiring cardiopulmonary bypass (CPB), applicable for pregnant patients not amenable to PMBV, and readily performed in emerging economies and developing countries. CMC may also have advantages in patients with severe pulmonary hypertension, since it avoids CPB and the systemic inflammatory response syndrome (SIRS)(9).

In our institution we have performing closed mitral commissurotomies since 1963 with good results. The postoperative morbidity is less than 1% and patient is followed with serial follow-up, and is evaluated for redo-closed mitral commissurotomy or mitral valve replacement depending on the valve morphology and suitability for commissurotomy. In our government general hospital, due to the long waiting list of patients for balloon mitral valvotomy, closed mitral commissurotomy is performed with good results. With the aid of trans-esophageal echocardiography (TEE) the commissurotomy can be guided and assessed on the operating table.

The finger fracture technique via the left chest and left atrial appendage was improved by Logan (10) in 1959 with the development of the Tubbs mechanical dilator and the concomitant combined left atrial left transventricular approach, and was subsequently adopted by other centers. There are several technical aspects of the traditional left chest approach that deserve emphasis. The left chest is usually entered through the 5th intercostal space. The pericardium is opened anterior to the phrenic nerve. The left atrial appendage is entered, unless clot is palpated. If clot is suspected or confirmed, then an alternative entry can be made in the body of the left atrium or through the left superior pulmonary vein if it is large enough to admit the right index finger.

If TEE is available, the position of the dilating index finger, or baby finger in redo cases, and the Tubbs dilator can be visualized, as well as assessing the presence of air, completeness of dilatation and residual significant MR. Other approaches to the left atrium have been described. It is not uncommon to have an incomplete split of one of the commissures. This can be assessed digitally, and additionally split with the exploring finger.

De et al. (11) from Vietnam described the finger fracture technique for redo CMC via the right chest approach. Cooley et al. (12), in 1959, described the right thoracotomy and transternal approach. Cosio Pascal and Ibarra-Perez (13), in

1974, described the median sternotomy approach. This had the advantage of easier conversion to OMC, when CMC was not feasible secondary to inadequate exposure, unstable hemodynamics, a friable or torn left atrial appendage, the presence of palpable left atrial clot, or a MVA < 0.6, making finger or dilator dilatation difficult or hazardous.

If the anteromedial commissure alone is opened, then further attempts to dilate the posterolateral commissure should be abandoned. Also, if MR is encountered with initial dilatation, then further dilatation attempts should not be attempted. There is no consensus regarding the degree of dilatation. We employ 2.5 cm diameter of the Tubbs dilator. Khonsari and Sintec (5) employ 3.5 to 4.5 cm, whereas Kumar (6) recommends 2.0 to 2.5 cm. Antunes (8) averages 3.6 to 3.8 cm in females and 3.9 to 4.1 cm in males.

Conversion of CMC to OMC during the left chest approach requires the use of CPB. The anterior left chest incision can be extended posteriorly for easier cannulation. This necessitates cannulation of the left femoral artery or the descending or inferior arch thoracic aorta for arterial flow, and left femoral vein, or retrograde cannula placement into the right ventricle via the main pulmonary artery and pulmonary valve for venous return. Exposure of the mitral valve can be obtained with a longitudinal opening of the left atrial appendage with extension into the left superior pulmonary vein (8).

Presently, the OPCAB apical suction device may make exposure of the left atrium even more feasible, as well as access to the LV apex. The most recent advance in CMC, is employing intra-operative TEE to better assess and approach the anatomy, guide the operating finger and Tubbs dilator during the commissurotomy, and assess the intra-operative result i.e. residual stenosis and/or new or increased regurgitation (14-16). The long term results of CMC and PMBV remain debated, yet the consensus is that both procedures remain comparable (17, 18).

Khonsari and Sintec (7) emphasize several technical points: gentle entry of the LAA to avoid tearing and bleeding; beware of LAA clot; premature opening of the Tubbs dilator may tear or injure the subvalvular apparatus; complete closure of the dilator before removal; assess any mitral regurgitation with the index finger before removal; and preventing air from entering the LA. Conversion to the open technique must also be considered if warranted.

In view of the young age of patients presenting with isolated mitral stenosis, PMBV is currently the first option, and CMC the alternate procedure,

thus giving the patient the longest possible result with conservative surgery. This is especially important for adolescent young females since these two procedures may carry them through their maternal reproductive life without complications.

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Figure 1. Patient in the semi-lateral position to expose left anterolateral chest.



Figure 2. Left chest opened with exposure of left ventricle apex.



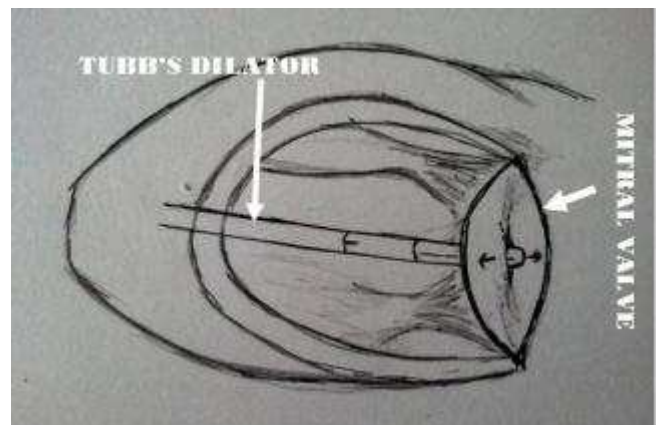
Figure 3. Statinsky vascular clamp at base of left atrial appendage.



Figure 4. Small, Medium, and Large Tubbs dilators.



Figure 5. Tubbs dilator, positioned through apical left ventricular stab incision, at orifice of mitral valve.



Mitral Valve split is made against leaflets not against commissures

Table 1. WILKINS MITRAL STENOSIS ECHO SCORE (3)

LEAFLET MOBILITY	Score
• Highly mobile valve with restriction of only the leaflet tips	1
• Mid portion and base of leaflets have reduced mobility	2
• Valve leaflets move forward in diastole mainly at the base	3
• No or minimal forward movement of the leaflets in diastole	4
VALVAR THICKENING	
• Leaflets near normal (4-5 mm)	1
• Mild leaflet thickening, pronounced thickening of the margin	2
• Thickening extends through the entire leaflets (5-8 mm)	3
• Pronounced thickening of all leaflet tissue (> 8-10 mm)	4
SUBVALVAR THICKENING	
• Minimal thickening of chordal structures just below the valve	1
• Thickening of chordae extending upto one third of chordal length	2
• Thickening extending to the distal third of the chordate	3
• Extensive thickening and shortening of all chordae extending down to the papillary muscle	4
VALVAR CALCIFICATION	
• A single area of increased echo brightness	1
• Scattered areas of brightness confined to leaflet margins	2
• Brightness extending into the mid portion of leaflets	3
• Extensive brightness through most of the leaflet tissue	4
MAXIMUM TOTAL SCORE	16



CHIRURGIE CARDIAQUE / CARDIAC SURGERY

THE DIAGNOSTIC SPECTRUM OF CARDIO-THORACIC DISEASES IN ACCRA

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Summary

Background. This study was designed to ascertain the spectrum of diagnoses of cardiothoracic diseases in this Centre. It is currently the only Cardiothoracic Centre in the country. All new cases presenting at the surgical outpatients' department (OPD) in one year were analysed.

Aim. To know the actual numbers, the distribution pattern of the diseases and to obtain data for future comparative studies.

Patients and Methods. Retrospective analysis of all new patients seen from January to December, 2008 was done. The source of data was the OPD records and the patients' case notes.

Results. Three hundred and ninety-five new cases were seen. They were congenital heart disease 146 (37.0%), thoracic diseases 112 (28.4%), adult cardiology cases 62 (16.0%), acquired heart diseases 38 (9.6%), miscellaneous cases 31 (7.8%) and vascular diseases 6 (1.5%). The four commonest cases of congenital heart diseases were ventricular septal defect (41.8%), Tetralogy of Fallot (19.2%), patent ductus arteriosus (12.3%), atrial septal defect (12.3%), and pulmonary stenosis (3.4%). The four commonest cases of acquired heart diseases were mitral regurgitation (44.7%), complete heart block (21.1%), aortic and mitral regurgitation (10.6%), and aortic regurgitation (7.9%). Carcinoma of the oesophagus was the commonest (27.1%) among the thoracic cases, followed by bronchogenic carcinoma (24.3%), anterior mediastinal masses (12.9%), and corrosive oesophageal stricture (11.4%).

Conclusion. Among the cardiothoracic diseases in Accra, the commonest congenital heart disease was ventricular septal defect, the commonest acquired heart disease was mitral regurgitation and the commonest thoracic disease was carcinoma of the oesophagus.

Keywords: Congenital heart disease, acquired heart disease, thoracic disease

Résumé

Contexte : Cette étude a été conçue pour vérifier le spectre des diagnostics des maladies cardio-thoraciques dans le seul Centre Cardio-thoracique du pays. Tous les nouveaux cas présentés au département chirurgical des maladies cardio-thoraciques (OPD) ont été analysée.

But : Savoir les nombres réels, le modèle de distribution des maladies cardio-thoraciques et obtenir des données pour des études comparatives futures.

Patients et Méthodes : L'analyse rétrospective de tous les nouveaux patients vus de janvier à décembre 2008 a été réalisée. La source de données était les rapports médicaux d'OPD et le dossier des patients.

Résultats : Trois cent quatre-vingt-quinze nouveaux cas ont été colligés. Il s'agissait de cardiopathies congénitales 146 (37.0 %), des maladies thoraciques 112 (28.4 %), des cardiopathies adultes 62 (16.0 %), des cardiopathies acquises 38 (9.6 %), des cardiopathies diverses 31 (7.8 %) et des maladies vasculaires 6 (1.5 %). Les quatre principales cardiopathies congénitales étaient la communication inter-ventriculaire (41.8 %), la Tétralogie de Fallot (19.2 %), la persistance du canal artériel (12.3 %), la communication inter-auriculaire (12.3 %) et la sténose pulmonaire (3.4 %). Les quatre principales cardiopathies acquises étaient l'insuffisance mitrale (44.7 %), le bloc auriculo-ventriculaire complet (21.1 %), l'insuffisance mitrale-aortique (10.6 %) et l'insuffisance aortique (7.9 %). Le carcinome de l'œsophage était le plus fréquent (27.1%) parmi les maladies thoraciques, suivi des carcinomes bronchogénique (24.3 %), des masses médiastinales antérieures (12.9 %) et de la sténose œsophagienne corrosive (11.4 %).

Conclusion : Parmi les maladies cardio-thoraciques à Accra, la cardiopathie congénitale la plus fréquente était la communication inter – ventriculaire. La cardiopathie acquise la plus fréquente était l'insuffisance mitrale, la maladie thoracique la plus fréquente était le carcinome de l'œsophage.

Mots-clés : Cardiopathie congénitale, cardiopathie acquise, maladies thoraciques

Introduction

Ghana is a relatively small country with a population of about 24 million people. It has only one Cardiothoracic Centre, which has been functioning steadily for over 2 decades now. It is therefore the sole referral Centre for cardiothoracic diseases in the country. We analysed the number and spectrum of diagnoses for all the new cases at the cardiothoracic outpatient's department (OPD) in one year.

Since such data is not readily available, it is hoped that this analysis will provide the information on the number of cases seen, the distribution pattern and give an idea of the incidence of some of these diseases in the country. The data will also be a reference point for future studies.

Patients and Methods

All patients seen at the surgical OPD of the National Cardiothoracic Centre from the 1st of January, 2008 to the 31st of December, 2008 were entered into a retrospective study design. The source of the data was the OPD records and the patients' case notes.

Results

Three hundred and ninety-five new cases were seen in the year. Most of them were congenital heart disease (CHD) 146 (37.0%), followed by thoracic diseases 112 (28.4%), adult cardiology cases 62 (16.0%), acquired heart diseases (AHD) 38 (9.6%), miscellaneous cases 31 (7.8%) and vascular diseases 6 (1.5%).

1. Congenital Heart Diseases (CHD)

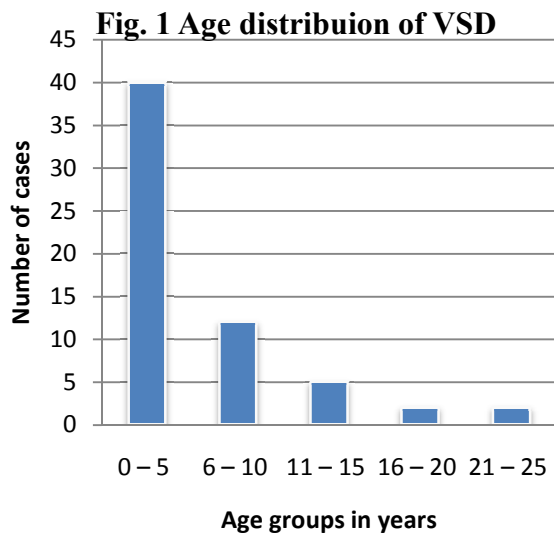
Among the CHDs (Table 1), ventricular septal defect (VSD) was the commonest; 61 (41.8%), followed by Tetralogy of Fallot (TOF); 28 (19.2%). Transposition of the Great Arteries (TGA) was the least; 1 (0.7%). The overall male: female ratio was 1: 1.1. However, there were more males with VSD (1.2: 1) and TOF (1.5: 1) and more females with patent ductus arteriosus (PDA) (1: 1.3) and atrial septal defect (ASD) (1: 8).

Table 1: Congenital Heart Diseases

Diagnosis	Number (Percentage)
Ventricular septal defect	61 (41.8%)
Tetralogy of Fallot	28 (19.2%)
Patent ductus arteriosus	18 (12.3%)
Atrial septal defect	18 (12.3%)
Pulmonary stenosis	5 (3.4%)
Atrioventricular septal defect	5 (3.4%)
Truncus Ateriosus	5 (3.4%)
Double outlet right ventricle	3 (2.1%)
Tricuspid Atresia	2 (1.4%)
Transposition of the great arteries	1 (0.7%)
Total	146 (100%)

Ventricular Septal Defect (VSD) (figure 1)

There were 33 males and 28 females. The age range was 6 weeks – 25 years, with a mean age of 4.7 years, and a modal age group of 0 - 5 years (figure 1).



Tetralogy of Fallot (TOF)

There were 17 males and 11 females. The age distribution was: 0 – 5 years; 23 (82.1%), 6 – 10 years; 3 (10.7%), 11 – 15 years; 1 (3.6%), and 16 – 20 years; 1 (3.6%). The age range was 5 months – 18 years, with a mean of 3.8 years

Patent Ductus Arteriosus (PDA)

There were 8 males and 10 females. The age distribution was: 0 – 5 years; 16 (88.9%), 6 – 10 years; 0 (0%), 11 – 15 years; 0 (0%), 16 – 20 years; 1 (5.6%) and 21 – 25 years; 1 (5.6%). The age range was 2 months – 21 years, with a mean of 3.8 years.

Atrial Septal Defect (ASD)

There were 2 males and 16 females. The age distribution was: 0 – 10 years; 11 (61.1%), 11 – 20 years; 2 (11.1%), 21 – 30 years; 3 (16.7%), 31 – 40 years; 0 (0%), 41 – 50 years; 1 (5.6%), and 51 – 60 years; 1 (5.6%). The age range was 3 weeks – 58 years, with a mean of 13.5 years.

Other congenital heart diseases

Pulmonary Stenosis (PS) : there were 4 females and a male, with an age range of 2 months – 12 years and a mean age of 4.8 years.

Truncus Arteriusus (TAT) : there were 2 males and 3 females, with an age range of 3 months – 2 years and a mean age of 1.1 years.

Atrio-Ventricular Septal Defect (AVSD) : there were 5 males, aged between 5 weeks and 1.5 years, with a mean age of 0.7 years.

Double Outlet Right Ventricle (DORV) : there were 3 females aged between 1 and 2.5 years.

Tricuspid Atresia (TA) : there were 2 males, aged 3 and 5 months.

Transposition of Great Arteries (TGA): this was a 2-year old male.

2. Acquired Heart Diseases (AHD)

Among the AHDs (Table 2), mitral regurgitation (MR) was the commonest; 17 (44.7%) and coronary artery disease (CAD) was the least; 1 (2.6%).

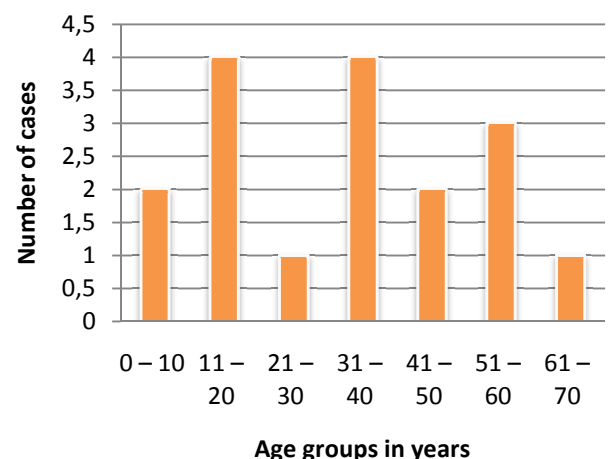
Table 2 : Acquired Heart Diseases

Diagnosis	Number (Percentage)
Mitral Regurgitation	17 (44.7%)
Complete Heart Block	8 (21.1%)
Aortic & Mitral Regurgitation	4 (10.6%)
Aortic Regurgitation	3 (7.9%)
Mitral Stenosis	2 (5.3%)
Aortic Stenosis	2 (5.3%)
Constrictive Pericarditis	1 (2.6%)
Coronary Artery Disease	1 (2.6%)
Total	38 (100%)

Mitral Regurgitation (MR)

There were 5 males and 12 females, with a mean age of 33.5 years, a range of 8 – 62 years and two modal age groups of 11 – 20 years and 31 – 40 years (figure 2).

Fig. 2 Age distribution of mitral regurgitation



years and a female aged 40 years.

Aortic Regurgitation (AR) : they were 3 males aged 41, 60 and 62 years.

Aortic Stenosis (AS) : these were a male aged 75 years and a female aged 73 years.

AR and MR : these were 2 males aged 21 and 24 years and 2 females aged 40 and 80 years.

Complete Heart Block (CHB) : these were 4 males and 4 females, with a mean age of 59.6 years and a range of 40 – 74 years.

Constrictive Pericarditis (CP) : this was a 63-year old male.

Coronary Artery Disease (CAD) : this was a 66-year old male with triple vessel disease.

3. Vascular Diseases

Abdominal Aortic Aneurysms : these were a male aged 62 years and 2 females aged 70 and 92 years.

Ascending Aortic Aneurysm : this was a 66-year old male.

Aortic Dissection (type A) : this was in a 43-year old male

4. Thoracic Diseases

The 112 thoracic cases have been divided into group 1 (70 cases) and group 2 (42 cases). The group 1 diseases are those that are finally managed only in this Centre within the country. (Table 3). The commonest case in group 1 was carcinoma of the oesophagus; 19 (27.1%), followed by bronchogenic carcinoma; 17 (24.3%). The group 2 diseases are those that are also managed in the other departments in the Korle-Bu Teaching Hospital and also in other hospitals in the country.

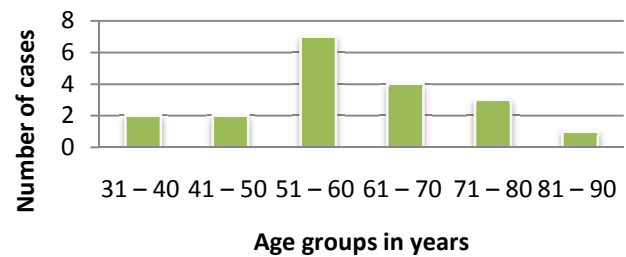
Table 3: Thoracic Diseases

Diagnosis	Number / Percentage
Carcinoma of the Oesophagus	19 (27.1%)
Bronchogenic carcinoma	17 (24.3%)
Anterior mediastinal masses	9 (12.9%)
Corrosive oesophageal stricture	8 (11.4%)
Achalasia of the cardia	6 (8.6%)
Aspergilloma of the Lung	3 (4.3%)
Chest wall tumours	3 (4.3%)
Oesophageal diverticulum	1 (1.4%)
Bullous lung disease	1 (1.4%)
Castleman's disease	1 (1.4%)
Enteric cyst in the right lung	1 (1.4%)
Eventration of the diaphragm	1 (1.4%)
Total	70 (100%)

Carcinoma of the oesophagus

There were 16 males and 3 females (sex ratio of 5.3: 1), with an age range of 33 – 86 years, a mean age of 59.8 years and a modal age group of 51 – 60 years (figure 3)

Fig. 3 Age distribution of carcinoma of the oesophagus



Bronchogenic carcinoma

There were 10 males and 7 females. Ten of the lesions were on the right and 7 on the left. The age distribution was : 41 – 50 years; 3 (17.6%), 51 – 60 years; 5 (29.4%), 61 – 70 years; 4 (23.5%), 71 – 80 years ; 3 (17.6%), 81 – 90 years; 1 (5.9%) and 91 – 100 years; 1 (5.9%). The mean age was 64.7 years, with a range of 49 – 91 years.

Other group 1 thoracic diseases

Corrosive Oesophageal Stricture: these were all males, with a mean age of 26.1 years and a range of 1.5 – 52 years

Anterior Mediastinal Masses: there were 7 males and 2 females. Six of them were goitres and 3 were Non Hodgkin's Lymphoma. The mean age was 49.2 years, with a range of 15 – 78 years.

Achalasia of the Cardia: there were 4 males and 2 females, with a mean age of 35.5 years, and a range of 18 – 56 years.

Aspergilloma: of the Lung there were 2 males and a female; aged 34, 45 and 66 years respectively. Two of the lesions were on the right and 1 on the left.

The diaphragmatic eventration was in a 70-year old female, and the oesophageal diverticulum was in a 76-year old male.

The three (3) chest wall tumours were in a male, 49 years and 2 females 66 and 73 years old.

Group 2 thoracic diseases

These were pleural effusion: 12 (28.6%), chronic empyema thoracis: 11 (26.2%), pulmonary tuberculosis: 9 (21.4%), chest injury: 6 (14.3%), inhaled foreign body: 2 (4.8%), swallowed foreign body: 1 (2.4%) and pulmonary metastasis: 1 (2.4%).

5. Adult Cardiology and Miscellaneous Cases

The adult cardiology cases that were seen at the surgical clinic were hypertensive heart disease:

44 (71.0%), congestive cardiac failure: 5 (8.1%), dilated cardiomyopathy: 5 (8.1%), pericardial effusion: 5 (8.1%) and ischaemic heart disease: 3 (4.8%).

The miscellaneous cases were peptic ulcer disease: 9 (23.7%), gastroesophageal reflux disease: 3 (7.9%), anxiety disorder: 2 (5.3%), malaria: 2 (5.3%), inguinal hernia: 1 (2.6%), lumbar spondylosis: 1 (2.6%), cerebro-vascular accident: 1 (2.6%), deep vein thrombosis: 1 (2.6%), drug reaction: 1 (2.6%), fistula-in-anus: 1 (2.6%), chronic obstructive airway disease: 1 (2.6%), and undiagnosed: 8 (21.1%).

Discussion

Congenital Heart Diseases

The four (4) commonest lesions in the study were VSD (41.8%), TOF (19.2%), PDA (12.3%) and ASD (12.3%). Similarly, most studies found VSD as the commonest lesion in the distribution pattern of congenital heart diseases,^{1, 2, 3, 4, 5} followed by PDA^{1, 2} or followed by TOF,^{3, 4} or followed by ASD⁵. The percentage of VSD varies from 30 – 62.5%.^{1, 4, 5}

The overall sex incidence for the congenital heart disease was slightly more in females, with the male: female ratio of 1: 1.1. Jaiyesimi¹ found it even. However, there were more males with VSD (1.2: 1) and TOF (1.5: 1) and more females with PDA (1: 1.3) and ASD (1: 8). There seems to be an over representation of ASDs in females in our study since what is quoted often is about 1: 2.⁶

The TOFs, PDAs and VSDs presented earlier with mean ages of 3.8 years, 3.8 years and 4.7 years respectively, compared with the ASDs that presented at a mean age of 13.5 years. This is because the pathophysiology of the first three lesions provoke an earlier symptomatology than ASDs, which can be tolerated a little more longer before presenting.

Acquired Heart Diseases

As expected, due to the socio-economic profile of the country, rheumatic heart disease (RHD) was the commonest diagnosis among the AHDs. And MR was the commonest; 44.7% (Table 2). Sani found 38.0% MR⁷ and Tantchou found 59.7% MR⁴. The MR male: female ratio was 1: 2.4, with a mean age of 33.5 years and a bi-modal age distribution of 11 – 20 years and 31 – 40 years. Ozer⁸ had a mean age of 39.7 years for males and 41.3 years for females.

The overall sex incidence of the RHD in this study was 1: 1.3, confirming with Tantchou⁴ 1: 1.3 and Sani⁷ 1:1.7 that RHD is commoner in females.

There were 8 cases of CHB. This value is not representative. It is an understatement because CHB and the other conditions needing permanent pacemaker implantation often come as emergencies and therefore are sent to the theatre without passing through the OPD. Therefore some of them are not captured in this OPD data.

Only one case of CAD (triple vessel disease) was recorded. The incidence of coronary artery disease in this country is relatively low, though it is gradually rising.

Thoracic Diseases

Carcinoma of the oesophagus was the commonest of the thoracic diseases, forming 27.1% (Table 3). And the male: female ratio was 5.3: 1. This is the usual pattern, where it is commoner in males⁹ with a range of 1.9: 1 to 13: 1.^{10,11,12} The mean age was 59.8 years with a modal age group of 51 – 60 years. This age group is also similar to Kachala's finding of 45 – 64 years⁹ and Badoe et al's finding of 40 – 60 years¹². Dia et al had a mean age of 49 years¹⁰.

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CHIRURGIE CARDIAQUE / CARDIAC SURGERY

SURGICAL RESULTS FOR RHEUMATIC HEART VALVE DISEASE IN SENEGAL

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Résumé

Objectif : Evaluer les résultats de la chirurgie des valvulopathies rhumatismales au Sénégal en terme de mortalité et de morbidité.

Patients et Méthodes : C'est une étude rétrospective sur 10 ans portant sur 250 patients opérés de valvulopathies rhumatismales à Dakar. Nous avons étudié les données cliniques, échographiques, les procédures opératoires ainsi que les complications post-opératoires. L'analyse statistique recherchait les variables liées à la mortalité et à la morbidité. L'âge moyen était de 38 ans et 47% des patients avaient moins de 20 ans.

Résultats : La mortalité post-opératoire immédiate était de 7.6% (n=19), elle était due à une protection myocardique insuffisante (n=3), à une instabilité hémodynamique (n=7), à une tamponnade cardiaque (n=3), à un accident vasculaire cérébral (n=2) et à une coagulopathie (n=4). La mortalité tardive était de 2% ; elle était due à une thrombose sur prothèse mécanique (n=2) et à une endocardite infectieuse (n=2). La mortalité opératoire était 4 fois plus élevée chez les patients qui avaient un temps de circulation extra-corporelle supérieur à 180 mn (HR= 6,18 ; p = 0.01). La fibrillation auriculaire était un facteur de mortalité (p < 0,001). Quatre malades (2 %) présentaient une fuite mitrale importante après plastie mitrale. Les résultats de la plastie étaient satisfaisantes dans 44% des cas.

Conclusion :

La pathologie cardiaque au Sénégal est dominée par les valvulopathies rhumatismales. La mortalité post-opératoire importante exige un renforcement des moyens en réanimation.

Mots clés : chirurgie, valves rhumatismales, résultats

Summary

Background : In Africa, rheumatic valve lesions are severe and require valve repair or replacement. The main purpose of this study is to evaluate outcomes of surgery for rheumatic heart valve disease in Senegal.

Patients and Methods : This is a 10-year retrospective study conducted in the cardiovascular center of Dakar University Hospital, involving 250 patients who underwent open-heart surgery. The study included clinical and ultrasound data. Additionally, surgical options, procedures and complications were also

included. The statistical analysis was done to assess the relationship between the mortality and the other variables. The mean age was 38 years, and 47% of patients were under the age of twenty. Mitral valve repair was performed in 40% of cases.

Results : The operative deaths (7.6%) were due to myocardial protection failure (n=3), to a low cardiac output (n=7), to a late-diagnosed cardiac tamponade (n=3), cerebral stroke (n=2) and a coagulation disorder (n=4). Late deaths (2%) were due to prosthesis thromboses and endocarditis. Mortality was four times higher in patients with CPB time > 180 min than patients with CPB time < 180 min (HR= 6,18 ; p =.01). Four patients (2%) had severe mitral valve leak after valve repair. Valve repair mid-term results were good in 44 % of patients and average (moderate mitral regurgitation) in 40 % of patients.

Conclusion : Rheumatic heart valve is the main cardiac disease in Senegal. The significant post-operative mortality requires the development of intensive care unit means.

Key words: cardiac surgery, Rheumatic valve, outcomes

Introduction

Cardio-vascular disease is the main cause of mortality in the world [11]. In the Western countries, coronary lesions are the most prevalent whereas in Africa, rheumatic heart valve disease is the most predominant [8]. In Africa, cardiac surgery is recent [14], and in Senegal, the first open-heart interventions were done in 1996. Valve lesions are severe there are due to recurrent rheumatic fever attacks and often requiring valve replacement. The prognosis of patients has been improved by surgical treatment. The main purpose of this study is to evaluate the outcomes of surgery for rheumatic heart valve disease in Senegal.

Patients and Methods

This 10-year retrospective study January 1998 to December 2007 was carried out in the Thoracic and Cardio-Vascular Department of Dakar University Hospital. It involved 250 patients surgically treated by cardiopulmonary bypass (CPB). All patients had one or more rheumatic valve lesions. Patients with incomplete files or patients who underwent closed heart surgery were excluded from the study. Epidemiological profile, clinical and echographic data, types of surgery as well as treatment of post-operative complications and outcomes were studied. A statistical analysis was performed to determine relationships between early hospital mortality, epidemiological profile, clinical and echographic data, treatment options, complications and outcomes. Proportional regression hazard was used to estimate all predictive variables; all variables were characterized for hazard ratio interpretation and analysis was completed using SAS 9.1 (SAS incorporation). Variables with $p < 0.20$ in a univariable analysis were chosen for multivariable analysis. Linear regression models were used to establish relationship between

variables and operative mortality. In the final model, variables with $p < 0.05$ were considered significant.

This series included 172 female and 78 male patients. The mean age was 38 years (6-60 years), 47% (117) of patients were below 20 years old. All patients suffered from rheumatic-related lesions were socially disadvantaged. 212 patients had a dyspnea, the reason for consultation was stage II (NYHA) dyspnea for 85% (212 patients) of cases and stage III of NYHA functional classification for 15% (38 patients). All patients were referred by cardiologists from small hospitals and were under medical therapy. Four patients with severe mitral stenosis had cerebral stroke sequelae. The mean cardio-thoracic index (MCI) on frontal view of pulmonary X-Rays was 0.63 (0.51-0.75). Atrial fibrillation (AF) was observed in 38 patients (15%). Trans-thoracic echocardiography (TTE) revealed mitral regurgitation (MR) in 104 patients (42%), mitral stenosis (MS) in 48 patients (19%), MR and MS (MRS 0) in 44 patients (18%), aortic regurgitation (AR) in patients (5%), aortic stenosis (AS) in 3 patients (1%), aortic mixed lesion (AML) in 19 patients (8 %), mitral and aortic lesion (MAL) in 20 patients (8 %).

In 12% of patients (n=30), a significant tricuspid regurgitation was also observed. Mean systolic pulmonary arterial pressure at trans-thoracic echocardiography was 60 mmHg (40 to 125 mmHg). Patients with a pulmonary arterial hypertension greater than 100 mmHg at TTE had to undergo right heart (n=4) catheterization. Left ventricular dysfunction was observed in 2% of patients with an ejection fraction below 50%. All patients underwent cardio-pulmonary bypass (CPB) between an aortic cannula and two vena cava cannula, with moderate hypothermia (34°). Crystalloid antegrade cardioplegia was used in

80% (n=200) of patients and the remaining 20% (n=50) had blood antegrade cardioplegia.

The access approach was through median sternotomy. Mitral valve exposure was via left atriotomy. Mitral valve repair (table 1) was performed in 40% of cases (n=100), mean age for this group was 12 +/-5 years.

Mitral valve replacement by a bileaflet mechanical prostheses was performed in 103 patients (41%); aortic valve replacement by mechanical prostheses : 37 patients (15%) and double mechanical valve replacement : 10 patients (4%). The posterior mitral valve has been preserved in all patients, and all of them were under anticoagulation oral therapy. Prothrombin-INR rate monitoring was free of events. Tricuspid regurgitation was treated by "De Vega" annuloplasty in 11% of patients (n=27) and in three patients (1%), a simple tricuspid plication of the anterior commissure of the tricuspid valve was acceptable.

A TTE was performed at discharge and subsequently every 6 months. Aspirin and antiobiothrophylaxis were administrated to patients with mitral valve repair-endocarditis prophylaxis.

Results

Mean aortic cross-clamp time was 57 minutes (31 to 132 mins). Mean CPB time was 72 minutes (62 to 220 mins). Mean tracheal intubation duration in intensive care unit (ICU) was 13 hours (6-23hrs). Mean ICU stay was 4 days (3- 13 days) and mean hospital stay was 7 days (5-15 days).

The operative deaths was 7.6% (n=19) due to myocardial protection failure (n=3), to a low cardiac output (n=7), to a coagulation disorders (n=4), to a late-diagnosed cardiac tamponade (n=3) and to an hemorrhagic cerebrovascular stroke (n=2). Late mortality was 2% (n=4) with two cases of mechanical prostheses thrombosis in patients who did not comply with their anticoagulant therapy. The other two deaths were due to infective endocarditis with mitral prostheses dehiscence. Among deceased patients, 10% suffered atrial fibrillation (28 patients). Among the 10 patients who underwent double valve replacement (aortic and mitral), three died. Causes of death are listed in Table 2. Mortality was four times higher in patients with CPB time superior to 180 min than patients with CPB time inferior to 180 min (HR= 6, 18; p =. 01). Atrial fibrillation, preoperative dyspnea and double valve replacement have an important impact in operative mortality, but not statistically significant (table 3).

Early complications are mainly cardiac tamponade 6% (14 patients) which were treated

by pericardial drainage through tubes. Major hemodynamic disorders were observed in 17 patients (7 %), stabilized by inotropes. Three patients with complete atrio-ventricular block were fitted with a pacemaker. The main infectious complication was lung infection in 39 patients (16%) associated with serofibrinous pleuritis (10%) and malaria (with *Plasmodium falciparum*) 10% (25 patients). Skin infections were due to *pseudomonas* (3%) requiring debridement and local care of the wound in four patients, one case of mediastinal infection was treated by surgical drainage associated with antibiotics. An infective endocarditis with mitral prostheses dehiscence required reoperation with use of an annular patch and new prostheses placement. Pulmonary arterial hypertension (2%) was stabilized with Corotrope, intubation and prolonged sedation. The other complications were renal failure (2%), hemorrhagic cerebrovascular stroke (1%), paraprothhetic leaks (1 %) and neuropsychological disorders (2 %).

Four patients (2%) had severe mitral leak after mitral repair. Among them, two presented with trans-mitral gradients of 8 and 12 mmHg respectively. These mitral leaks were associated with significant tricuspid regurgitation and high arterial pulmonary pressure in three patients; all of them were stabilized with medical treatment. A rheumatic fever attack was observed in two patients without deterioration of the repair. Regular echocardiography checks were performed in patients who had undergone mitral valve repair. Valve repair mid-term results were considered satisfactory in 44 % of patients, average (moderate MR) in 40% of patients and poor (severe MR) in 4% of patients. Mean follow-up was 60 months (12 to 96 months) and 10% of patients (15 valve replacements and 10 mitral valve repair) were lost to follow-up (figure 1).

Discussion

In Africa, cardiac surgery is conducted predominantly for rheumatic heart valve disease [8]. Rheumatic fever prevails with a variation between 3 % and 14% [13]. This disease affects young people of school age. The low income of people and their limited access to medical care expose them to severe cardiac infectious lesions. Mitral valve repair is the most-preferred procedure, since preservation of the native valve allows ventricular function to be safeguarded, avoiding anticoagulation treatment-related events [7]. The study team carried out 100 mitral valve repair (40%) using the Carpentier techniques [5].

This repair is usually performed in children with mitral regurgitation as predominant lesion [8]. However, in the case of a rheumatic valve, plasty is technically difficult and the results may be compromised by a new emergence of the disease. Despite this difficulty, valve repairs in children must be favored over biological valve replacements because of potentially early bio-prosthetic degenerations [15]. The study team performed mechanical prosthetic valve replacements in 60% of patients. The sub-valvular apparatus was preserved to reduce left ventricular function loss and cardiac rupture risks. The study presents an high mortality rate (9.2%) compared to others (2% to 7%) [4,3]; and mortality was higher in patients, with long CPB time. The severity of lesions and left ventricular dysfunction after CPB can explain this mortality. Atrial fibrillation represents a morbid-mortality risk factor [1].

Atrial fibrillation involvement as a mortality risk factor should encourage the team to perform per-operative treatment of AF with the Cox maze III procedure [6]. There was a significantly high death rate among patients who underwent double valve replacement (3 patients), but the small sample of 10 patients weakens the validity of the test.

Left ventricular dysfunction before surgery is also an important post-operative mortality factor [7]. In the series conducted by the team, the left ventricular dysfunction rate was low (2%), which can be explained by the pre-operative selection of patients with acceptable left ventricular function. The main cause of morbidity was lung infection; patients were intubated and ventilated for a mean duration of 13 hours (6 to 23 hrs). Early or fast track extubation is currently being assessed in cardiac valve surgery with promising results [9]. Cases of malaria in ICU are explained by the fact that the country (Senegal) is located within the endemic area [12]. Mediastinitis cases were treated by debridement, drainage and irrigation. Despite care taken in patients suffering from severe pulmonary arterial hypertension, the team experienced 2% of post-operative acute PAHT events. In these cases, the only option left by the team was to extend intubation duration (> 12hrs) with a 100% FIO₂ associated with phosphodiesterase inhibitors, since nitric oxide (NO) is not available in the country (Senegal). In the Said series, repair-related morbidity concerned four patients, two of whom presented mitral disease with severe valve lesions making the plasty technique difficult (7). As recommended by Antunes et al. [2] all children were treated with penicillin in the post-operative period.

Administration of aspirin reduces the embolic risk. Patients with mechanical valve prostheses had their hemostasis check-up performed in the center without charge, thus facilitating their follow-up. This contributes to the small rate of patients lost to follow-up (10%) compared with earlier patients operated on abroad [10].

Conclusion

In Senegal, cardiac surgery is relatively a recent speciality. The primary cardiac disease is rheumatic valve disease. The patients are young with low income; they experienced severe heart lesions. There is a high level of post-operative morbid-mortality ; but reinforcement of human resources and ICU equipment should improve patient care management.

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Table 1: Mitral Valve Repair Procedures

Surgical procedures	Percentage
Rings (Carpentier, homemade)	84%
Tendinae chordae shortening	73%
Double commissurotomy	22%
Split closure	17%
Anterior leaflet resection	5 %
Posterior leaflet enlargement	18%

Table 2: Causes of Death

Causes of Death	Effectif	Percentage
Early Mortality		
• Myocardial protection insufficiency	3	1%
• Low cardiac output	7	3%
• Coagulation disorder	4	2%
• Tamponade	3	1%
• Hemorrhagic cerebrovascular accident	2	1%
Late Mortality		
• Infective Endocarditis	2	1%
• Prostheses thrombosis	2	1%

Table 3: Multivariable analysis of Hazard Ratio

Parameters	Hazard Ratio	Valeur de p
Preoperative dyspnea	3,73	.12
Double valve surgery	2,40	.41
CPB time	6,18	.01

Analysis of Maximum Likelihood Estimates

Variable	DF	Parameter Estimate	Standard Error	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard confidence	Ratio I Limits
Preoperative dyspnea	1	1.31582	0.84473	2.4264	0.1193	3.728	0.712	19.520
Double valve surgery	1	0.87710	1.05931	0.6856	0.4077	2.404	0.301	19.169
CPB time	1	1.82091	0.74192	6.0237	0.0141	6.177	1.443	26.44

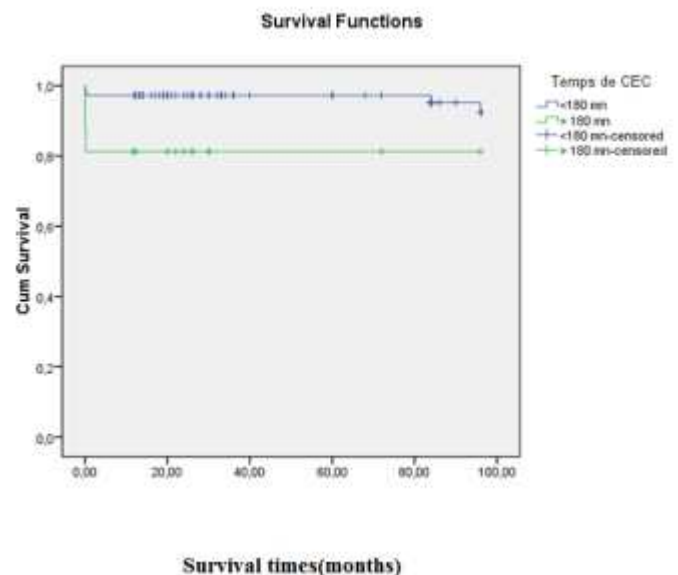


Figure 1: Kaplan-Meier survival curves: Survival on whether CPB time was > 180 min or CPB time < 180 min



CHIRURGIE THORACIQUE / THORACIC SURGERY

TRAITEMENT CHIRURGICAL DES PACHYPLEURITES SECONDAIRES AUX PYOTHORAX CHRONIQUES : A propos de 141 cas

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Résumé

Objectifs : Evaluer les résultats du traitement chirurgical des pachypleurites

Patients et méthodes : Il s'agit d'une étude rétrospective de janvier 1990 à décembre 2011, concernant 141 patients ayant présenté une pachypleurite de plus six semaines et traités dans notre centre. Il y avait 101 hommes et 40 femmes d'un âge moyen de 22 ans. Le diagnostic a été porté par la radiographie, l'échographie, la tomodensitométrie (n=97); les étiologies retrouvées étaient une tuberculose (n=49), une pneumonie à germes non spécifiques (n=62), un abcès du poumon (n=12), un traumatisme (n=11), un abcès du foie (n=3), une fistule oeso-pleurale par corps étranger (n=3), un abcès sous-phrénique post-opératoire (n=1); la sérologie VIH était positive chez 23 patients. Une décortication par thoracotomie a été réalisée chez tous les patients, encadrée d'une kinésithérapie respiratoire et de la correction des perturbations de l'état général. Les formes bilatérales ont été traitées en deux temps. Une antibiothérapie antituberculeuse ou non spécifique adaptée aux germes a été associée.

Résultats : Trois patients sont décédés. La morbidité post-opératoire a été un drainage prolongé (n=20), un défaut de réexpansion régressif sous kinésithérapie respiratoire (n=25), une ostéite costale (n=2), une suppuration pariétale (n=28). La transfusion moyenne (n=44) a été de 2.4 unités en per-opératoire et en hospitalisation. L'analyse univariée a retenu comme facteur influençant significativement les complications post-opératoires le VIH+. La durée moyenne d'hospitalisation a été de 6.7 jours en pré-opératoire et de 13.2 jours en post-opératoire. Le suivi à trois mois a noté un bon résultat chez 128 patients (90.8%).

Conclusion : Nous préconisons la décortication entre le premier et le troisième mois d'évolution de toute pachypleurite.

Mots clés : Pachypleurite – décortication – tuberculose – VIH.

Summary

Objective : To present our experience of the surgical treatment of pachypleuritis.

Patients and methods : It was a retrospective study from January 1990 to December 2011, concerning 141 patients who had a pachypleuritis for at least six weeks and treated in our centre. There were 101 male and 40 female with a mean age of 22 years. The diagnosis was made by X ray chest, echography, thoracic

scan (n=967); the etiologies observed were tuberculosis(n=49), pneumonia with non specific bacteria(n=62), a pulmonary abscess(n=12), a trauma(n=11), a liver abscess(n=3), oeso-pleural fistula by a foreign body(n=3), a post-operative subphrenic abscess(n=1); HIV test was positive for 23 patients(16.3%). A decortication by thoracotomy was performed for all the patients, surrounded by a respiratory physiotherapy and the correction of general physical troubles. For the bilateral lesions, the more favourable side to surgery was treated at first then the other side 6 to 8 weeks afterwards. An anti-tuberculosis chemotherapy or non specific therapy according to bacteria was associated.

Results: Three patients died. The post-operative morbidity was long term drainage, a non sufficient pulmonary expansion which was treated by respiratory physiotherapy, a rib infection, a chest abscess. Mean transfusion (n=44) was 2.4 units during operation and hospitalization. The statistic analysis showed as a significant influential factor positive HIV. Mean hospital duration was 6.7 days before surgery and 13.2 days after surgery. The follow-up at three months noticed a good result for 128 patients (90.8%).

Conclusion: We suggest a surgical decortication of pachypleuritis in between the first and the third month of evolution.

Key words: Pachypleuritis – Decortication – Tuberculosis - HIV

Introduction

Les pyothorax chroniques génèrent une pachypleurite qui engaine le poumon et l'empêche de s'expandre pour assurer sa fonction d'hématose^{1,2}. Avant la découverte des antibiotiques, la pachypleurite était retrouvée pratiquement chez tous les patients qui survivaient d'une pleurésie purulente^{1,2}. Aujourd'hui seuls les cas vus tard, les cas non traités, ou insuffisamment traités évoluent vers la pachypleurite. En Afrique par contre, avec la tuberculose qui sévit de façon endémique et surtout avec la pandémie du SIDA qui augmente son incidence, bon nombre de patients sont vus d'emblée au stade de pachypleurite^{3,4,5}, dont la prise en charge peut permettre de sauver le poumon sous jacent⁶. La stratégie thérapeutique doit toutefois tenir compte de l'évaluation du poumon sous-jacent notamment dans la maladie tuberculeuse au cours de laquelle les lésions parenchymateuses sont souvent majeures au point d'entraîner l'échec de la chirurgie^{1,4}.

Face à ce constat, nous avons entrepris ce travail dont le but est d'évaluer notre attitude chirurgicale en cas de pachypleurite.

Patients et méthodes

Il s'agit d'une étude rétrospective de janvier 1990 à décembre 2011, concernant

141 patients qui présentaient un pyothorax chronique associé à une pachypleurite qui évoluait depuis au moins six semaines (tableau 1) et qui ont fait l'objet d'une décortication. Il y avait 101 hommes (71.6%) et 40 femmes (28.4%) d'un âge moyen de 22 ans (extrêmes de 6mois à 51ans).

Le diagnostic a été porté sur un faisceau d'arguments comprenant l'évolution de l'opacité radiologique sur des radiographies standards successives (Figure 1 et 2), les ponctions pleurales blanches, le cloisonnement du liquide à l'échographie, la présence d'un épanchement et d'une plèvre épaissie (Figure 3) à la tomodensitométrie (n=97) et la confirmation par l'intervention chirurgicale (Figure 4). Le bilan étiologique a compris l'examen cyto-bactériologique du liquide pleural, la recherche de bacille de Kock dans le liquide pleural et dans les crachats et l'intra-dermo-réaction à la tuberculine. La sérologie VIH été réalisée systématiquement chez tous les patients (test ELISA) ; la confirmation de la séropositivité (n=23) a été apportée par le WESTERN BLOT ou par le PEPTILAV. Il a permis de retrouver plusieurs étiologies (Tableau 1). Tous les patients ont fait l'objet d'une préparation avant l'intervention poursuivie dans le post-opératoire ; elle a consisté en un drainage de posture, à l'administration de fluidifiants lorsqu'il y avait une bronchorrhée, en une gymnastique respiratoire, et en la correction des perturbations de l'état général. La procédure chirurgicale a été réalisée sous anesthésie générale, avec intubation trachéale non sélective et par thoracotomie postéro-latérale classique dans le 5ème espace intercostal. La plèvre pariétale a été décortiquée partiellement et la plèvre viscérale totalement (figure 4) ; La poche pleurale a été évacuée (Empyémectomie) et aseptisée au sérum physiologique tiède enrichi de polyvinylpyrrolidone (Betadine®). Le poumon libéré a été insufflé par l'anesthésiste à l'embut et à la main pour le déplisser et apprécier la réexpansion ; l'intervention a été terminée par un lavage

abondant de la cavité pleurale au polyvinylpyrrolidone (Betadine®) et par la mise en place de deux drains reliés à une source d'aspiration douce (Les critères d'ablation des drains ont été l'absence de bullage, les quantités drainées inférieures à 2cc/kg/24 heures et le poumon à la paroi à la radiographie thoracique). Une thoracoplastie complémentaire (2 à 7 côtes) a été réalisée lorsque la reexpansion pulmonaire occupait moins de 75% de la cavité thoracique (n=14). Dans les formes bilatérales, le côté susceptible de bien réagir à la chirurgie a été traité en premier suivi de l'autre côté 4 à 6 semaines après (n=11). En cas de tuberculose (n=49) le traitement antituberculeux a débuté 2 mois avant la chirurgie et a été poursuivi au moins 4 mois après selon le protocole en vigueur en Côte d'Ivoire ; les autres cas ont fait l'objet d'une antibiothérapie non spécifique de 10 à 21 jours adaptée aux germes et à l'antibiogramme. Les analyses statistiques ont été effectuées par le test de chi carré pour les variables qualitatives et le test t de student pour les moyennes et étaient significatives pour $p < 0.05$.

Résultats

Trois patients sont décédés (2.1%), l'un d'une hémorragique avec Coagulation Intra-Vasculaire Disséminée (CIVD) et deux d'un choc septique dans le post-opératoire immédiat. La morbidité post opératoire a été variable (tableau 2) : 12 patients ont nécessité un drainage prolongé pour un bullage persistant (n=20) et un liquide de drainage supérieur à 400cc/24 heures (n=5). La mise en siphonage des drains a entraîné la baisse du bullage et des quantités, permettant de les retirer au bout 12 jours en moyenne. Une insuffisance de réexpansion (n=25) a été notée et la majorité a bien évolué sous kinésithérapie respiratoire active et prolongée (n=16). Un patient a fait l'objet d'une pneumonectomie au 15ème jour post-opératoire pour un poumon tuberculeux complètement détruit ne répondant pas à la kinésithérapie, avec des suites post-pneumonectomie simples. Les poches pleurales résiduelles (n=8) ont régressé en 3 mois avec l'affaissement spontané du thorax et sous kinésithérapie diaphragmatique. Deux ostéites costales ont bien évoluées sous traitement médical et une a fait l'objet d'une exérèse. Les soins locaux ont été suffisants pour le tarissement des suppurations pariétales (n= 28). La transfusion moyenne (n=44) a été de 1500cc en per-opératoire et post-opératoire. En analyse univariée, seule une sérologie VIH positive était significativement associée à la survenue de complications post-opératoires (Tableau 2). La

durée moyenne d'hospitalisation a été de 6.7 jours en pré-opératoire et de 13.2 jours en post-opératoire. Nous avons noté à trois mois post-opératoire, un bon résultat chez 128 patients (90.8%) ; ils ne présentaient aucun signe fonctionnel, avaient récupérés un bon état général et avaient à la radiographie une réexpansion pulmonaire satisfaisante avec souvent une légère asymétrie thoracique (Figure 5). Par contre, chez 17 patients (20.7%) le comblement de la cavité a été obtenu au prix d'une importante asymétrie thoracique dont cinq avec un début de scoliose.

Discussion

La pachypleurite touche les sujets jeunes en Afrique^{3,4,5}, l'âge moyen dans notre étude était de 22 ans. Les patients ont été adressés après échec du drainage ou du lavage-drainage. La tomodensitométrie n'a pas été systématique car la majorité des patients sont des indigents et de plus cet examen n'est pas indispensable à la décision chirurgicale. La préparation médicale a été un appoint très important à la chirurgie ; elle a permis d'amener les patients très souvent infectés et dénutris en toute sécurité à la chirurgie^{4,6}, par le traitement de l'anémie, de la dénutrition, de l'infection (une antibiothérapie générale adaptée au germe), par un drainage bronchique, une kinésithérapie diaphragmatique et de réexpansion pulmonaire poursuivie plusieurs semaines après la chirurgie pour minimiser les séquelles pleurales et améliorer la fonction respiratoire. La chirurgie donne des chances de sauver le poumon mais elle peut être difficile et laborieuse en fonction du stade évolutif de la pachypleurite^{4,10}. Du côté de la paroi thoracique interne, la pachypleurite fait rapidement corps avec le feuillet pariétal de la plèvre, qui perd son individualité si bien que le décollement ne peut être que extra-pleural. Du côté viscéral, la pachypleurite dans les 15 premiers jours est associée à une hyper-vascularisation sous-pleurale qui rend toute tentative de décortication également très hémorragique. Lorsque la pachypleurite arrive à maturité, l'hypervascularisation sous pleurale s'atténue, et la couche fibreuse s'isole du feuillet viscéral dont elle devient facilement clivable, c'est le moment idéal pour la décortication (Figure 4). Vers le 3ème mois, la pachypleurite viscérale s'enracine et se confond à la plèvre pariétale rendant la décortication très difficile et très hémorragique^{1,2,10}. Une thoracotomie postero-latérale habituelle avec ou sans ablation costale permet la décortication. Nous optons actuellement très souvent pour une

décortication viscérale totale exclusive (à cause des pertes sanguines importantes qu'engendre souvent la décortication pleurale pariétale). Le geste doit permettre d'éviter les fuites aréiques et d'assurer une bonne réexpansion pulmonaire^{2,11}. Lorsque les lésions sont bilatérales. Il est possible de traiter en un temps les deux cotés par sternotomie mais la morbidité post-opératoire est plus grande^{12,13}. Actuellement dans les cas vus tôt, il est possible de réaliser une vidéo-thoracoscopie qui est moins agressive et qui permet de traiter les deux cotés dans le même temps opératoire^{13,14,15}. La vidéo-thoracoscopie n'est pas de pratique courante dans notre centre, nous préférons donc le traitement en deux temps car nos patients sont très fragiles, ne supportent pas une anesthésie trop longue et de plus, nos moyens de réanimation sont limités. Nous traitons en premier le coté susceptible de bien réagir à la chirurgie, ensuite le second côté 4 à 6 semaines plus tard. Bien souvent la décortication est insuffisante au comblement de la cavité obligeant à recourir à des traitements adjuvants. La thoracoplastie, les myoplasties et épiploplasties, les muscles du thorax et l'épiploon se prêteraient bien à ces interventions car disposant d'un bon réseau de suppléance, d'une bonne longueur et d'un bon volume permettant de combler les espaces, peuvent trouver leur place dans l'arsenal thérapeutique^{15,16,17,18,19}. La thoracoplastie a été réalisée chez 11 de nos patients avec de bons résultats. Dans notre pratique, la fonte musculaire des patients étaient telle que les myoplasties étaient de réalisation difficile. Les suites opératoires ont été globalement simples en dehors de trois patients décédés et d'un patient ayant fait l'objet d'une pneumonectomie pour poumon détruit mais qui a bien évolué dans le post-opératoire.

Conclusion

Il s'agit d'une affection très grave qui peut compromettre le pronostic fonctionnel du poumon et à long terme le pronostic vital du patient. La décortication permet de sauver le poumon. Les résultats sont bons si la chirurgie est soutenue et encadrée par un traitement médical. Au vu de nos résultats nous recommandons la décortication pleurale viscérale totale exclusive chez tous les patients chaque fois que l'indication se pose entre le 1^{er} et le 3^{ème} mois d'évolution de la maladie.

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Tableau 1 : Etiologies et sérologies VIH des 141 pachypleurites traitées chirurgicalement.

Etiologies	VIH+		VIH-		
	n	%	n	%	p
Pneumonie à germes non spécifiques	12	52,8	11	45,5	< 0,01
Tuberculose	20	40,5	29,2	25,8	0,03
Abcès du poumon	3	100	0	13,6	< 0,01
Traumatisme	2	18,2	9	81,9	0,555
Post opératoire	0	0	1	100	< 0,01
Abcès du foie	1	33,3	2	66,6	0,17
Corps étranger	0	0	3	100	< 0,01

Tableau 2 : Complications post opératoires des 141 interventions pour pachypleurite selon le terrain.

Complications post opératoires	VIH+		VIH-		
	n	%	n	%	p
Drainage thoracique prolongé	15	75	5	25	< 0,01
Défaut de réexpansion pulmonaire	14	56	11	44	< 0,01
Douleurs intercostales persistantes	13	36,1	22	61,1	< 0,01
Ostéites costales	2	7,5	0	0	< 0,01
Poche pleurale résiduelle	5	62,5	3	37,5	0,687
Suppuration pariétale	11	39,3	17	60,7	< 0,01
CIVD	0	0	1	100	< 0,01
Choc septique	1	100	0	0	< 0,01

CIVD : coagulation intra vasculaire disséminée



Figure 1 : Pyothorax gauche responsable d'un engainement du poumon gauche et une déviation du médiastin vers la droite

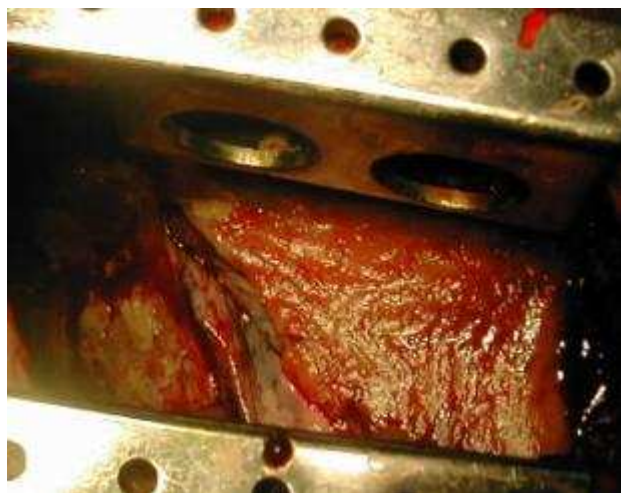


Figure 4 : Vue per opératoire d'une décortication pleurale. On note la pachypleurite viscérale engainant le poumon. Le décollement partiel de la pachypleurite permet de voir le poumon en dessous.



Figure 2 : pyothorax bilatéral (pyothorax droit et pyopneumothorax gauche)

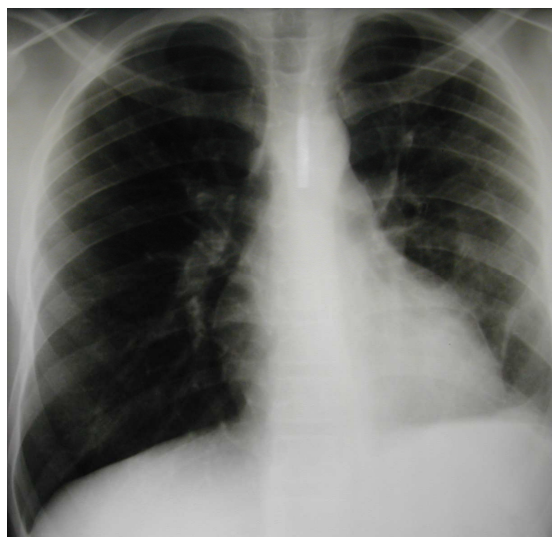


Figure 5 : Résultat à J30 après décortication pleurale gauche. On note une ascension du diaphragme pour tenter de réduire le volume de la cage thoracique.

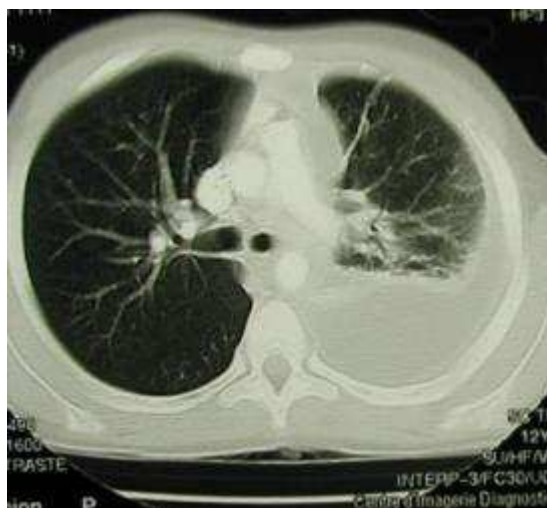


Figure 3 : vue TDM d'un pyothorax gauche avec pachypleurite. Le poumon controlatéral est sain.



CHIRURGIE THORACIQUE / THORACIC SURGERY

CUTANEOUS METASTASIS OF CARCINOMA OF THE OESOPHAGUS TO THE LEFT SHOULDER: A CASE REPORT

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Summary

Carcinoma of the oesophagus is a very devastating condition which usually has distant metastasis by the time of diagnosis. However, cutaneous metastasis is highly uncommon, especially the squamous cell carcinoma type. The few cases reported are from adenocarcinomas. We present the case of an advanced squamous cell carcinoma of the oesophagus with cutaneous metastasis to the left shoulder.

Keywords: cutaneous metastasis, squamous cell carcinoma of the oesophagus

Résumé

Le carcinome de l'œsophage est une tumeur très dévastatrice qui métastase d'habitude à distance du diagnostic. Cependant, la métastase cutanée est très rare, particulièrement le type carcinome épidermoïde. Peu de cas rapportés sont d'origine adénocarcinomeuse. Nous présentons le cas d'un carcinome épidermoïde évolué de l'œsophage avec une métastase cutanée à l'épaule gauche.

Mots-clés : métastase cutanée, carcinome épidermoïde de l'œsophage

Introduction

Carcinoma of the oesophagus is an aggressive condition with a very high morbidity and mortality, increasing incidence and a poor prognosis.^{1,2,3,4} The most consistent risk factors identified in most studies are alcohol consumption, smoking, environmental and dietary factors, increasing age (>60 years), and the male gender (3:1).^{1,2,3,4,5,6} Metastatic patterns are by direct, lymphatic, and haematogenous spread. Cutaneous metastasis of carcinoma of the oesophagus is not common.^{7,8,9,10} We hereby present a case of carcinoma of the oesophagus who after a transthoracic oesophagectomy and oesophagogastrostomy, presented one year later with cutaneous metastasis to the left shoulder.

Case Report

This 60-year old man was seen with a 6-month history of progressive dysphagia to solids and semi-solids. He could take only liquids. He smoked two packs of cigarettes daily for 30 years and drank about 150ml of strong spirits daily for the same period. He was a seaman (postman). He had lost weight, and was mildly dehydrated. There was no peripheral lymphadenopathy. There was a hepatomegaly of 10cm. The barium swallow showed an irregular outline, a filling defect with shouldering in the distal oesophagus. The oesophagoscopy found an impassable ulcerated tumour at 35 cm. The histology came out as invasive squamous cell carcinoma. The abdominal ultrasound did not find any evidence of intra-abdominal metastasis. He was prepared for surgery. He had transthoracic oesophagectomy

(Ivor-Lewis). The findings were; distal oesophageal tumour of 4 cm in length, involved tracheo-bronchial lymph nodes and hepatomegaly (with no macroscopic lesions seen). There was no infiltration of nearby structures (stage T3N1M0, IIIB). He was discharged home on the 13th post operative day, on normal diet. The histology of the resected specimen came out as invasive well differentiated squamous cell carcinoma with full thickness involvement of the wall and regional lymph node involvement (9 out of the 15 resected).

He was put on a 3-monthly follow-up at the OPD. One year later he presented with a 2 cm ulcerated nodule on the left shoulder. The ulcer had raised everted edges, necrotic floor and a nodular and hard base. There was no bony nor pulmonary involvement. An incision biopsy done came out as metastatic squamous cell carcinoma. The stage was now T3N1M1, IV. He was referred to the oncologist where he had sessions of cisplatin-based chemoradiation to the metastatic site but there was no response. The wound did not heal. It gradually increased in size and became a huge ulcer. He had daily wound dressings until (together with the general debilitation) he passed away 6 months later (that is 1½ years after the oesophagectomy).

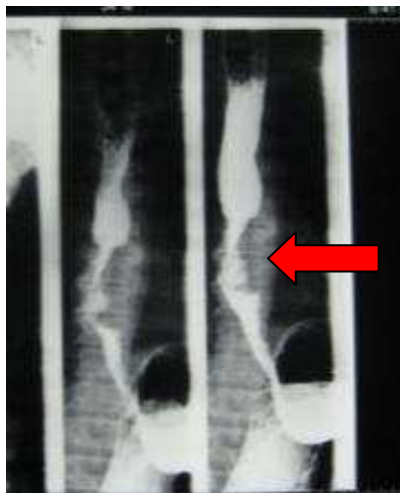


Figure 1. Barium swallow showing irregular outline



Figure 2. Ulcer (arrow) with raised and everted edges filling defect and shouldering (arrow)

Discussion

In most cases, by the time of diagnosis, carcinoma of the oesophagus is far advanced.^{1,2,3,4} This is due to the rich plexus of lymphatics forming a network within the oesophageal wall favouring spread far beyond the macroscopic margins. Another factor favouring early spread is the lack of serosa covering the oesophagus, except for the abdominal portion.³ The established forms of metastasis are direct spread, lymphatic, and haematogenous spread. The direct spread involves tumour growth through the oesophageal wall to invade surrounding structures like the aorta, the spine, the pleura, the lung, the trachea and/or bronchi, the pericardium and the diaphragm. The lymphatic spread usually involves the deep cervical, paraoesophageal, tracheo-bronchial, left gastric and celiac lymph nodes. Haematogenous spread goes to the liver, lung, bones or the brain.

Our patient had tracheo-bronchial lymph node involvement. Since the thoracic duct joins the venous system at the junction of the left internal jugular and subclavian veins, the nearby left supraclavicular lymph nodes may become involved (called Virchow's node or Troisier's sign). Our patient did not have Virchow's nodes. Neither was there any evidence of bony nor pulmonary metastasis on the chest x-ray. His metastasis was to the soft tissue (skin and subcutaneous tissue) over the antero-superior aspect of the left shoulder. The shoulder joint was not involved.

Cutaneous metastasis usually occurs haematogenously or via the lymphatics.⁷ Few cases have been reported, with a slight preponderance of adenocarcinomas.^{7,8,9,10} Our patient had a squamous cell carcinoma, thereby

adding himself to the small group of patients with oesophageal squamous cell carcinoma with cutaneous metastasis. In some cases the cutaneous lesions may also actually herald the diagnosis of the primary malignancy.^{8,9,10,11} Our patient's metastasis did not respond to the chemoradiation. He passed away 6 months later.

Conclusion

Carcinoma of the oesophagus rarely metastasizes to the skin. If it does it is usually an adenocarcinoma. Few cases of squamous cell carcinomas are also now being encountered.

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CHIRURGIE THORACIQUE / THORACIC SURGERY

CARCINOMA OF THE PROSTATE MASQUERADING AS A GIANT ANTERIOR CHEST WALL TUMOUR - A CASE REPORT

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Abstract

Carcinoma of the prostate is the commonest malignancy affecting men in West Africa. Though metastases to other sites are well known, chest wall metastases are uncommon.

An unusual case of undiagnosed symptom free prostatic carcinoma presenting as a giant anterior chest wall tumour is being reported. En bloc excision and chestwall reconstruction was performed, with commencement of hormonal therapy. The patient was however lost to a massive saddle pulmonary embolus on the 16th postoperative day.

This case highlights the importance of screening for other less likely causes when one is presented with a chest wall mass for evaluation.

Keywords

Carcinoma of prostate, metastasis, anterior chest wall mass.

Case report

A 63 year old male was seen from a neighbouring country with a painless giant anterior chest wall mass of two years duration. A wedge biopsy done prior to referral was reported as a cystic adenoid carcinoma, possibly as a secondary deposit from a cylindroma of the salivary glands. He was referred for excision and adjuvant therapy.

He was seen with no symptoms referable to the cardio respiratory or gastro-intestinal systems. There were no lower urinary tract obstructive or irritative symptoms and no bone pain. Examination revealed a 15 x 15cm firm mass with soft and cystic areas. A 5cm surgical scar was visible at the apex and there was fixity to the underlying sternum but not to the skin. There was no differential warmth. A solitary hard mobile

lymph node, 2.5 by 3cm was palpable in the left axilla. The mouth and salivary glands were normal. There was no cervical lymphadenopathy. Chest radiographs in postero-anterior and lateral views showed a soft tissue mass without calcification that had eroded the upper sternum. A chest CT scan showed a heterogeneous mass of the antero-superior mediastinum with destruction of both tables of the manubrium sterni and extension to the pre-sternal area. Figures 1 – 3. Deep cervical lymph nodes were enlarged.

Pre-operative blood work-up was normal. On-table urethral catheterisation was difficult. Bladder care was therefore achieved via suprapubic catheterisation.

Findings at surgery were a 15 x 15 cm heterogeneous mass, eroding the upper half of the sternum. En bloc excision of the tumour and sternum with 3cm of adjacent costal cartilages bilaterally was performed. Closure of the defect and chestwall reconstruction was achieved with marlex mesh and pectoralis major myocutaneous flap. Intercostal drains were placed bilaterally.

He required mechanical ventilation until postoperative day 4. He was extubated but had to be re-intubated 10 hours later on account of incipient respiratory failure. A tracheostomy was required to facilitate weaning from mechanical ventilation on postoperative day 7. He was anticoagulated with fraxiparine 0.6mls once daily from the day of operation. He was eventually discharged to the regular ward on postoperative day 10.

Histological examination of the surgical specimen revealed prostatic adenocarcinoma. Digital rectal examination revealed a firm grade II enlargement of the prostate gland. Prostatic specific antigen assay performed was 78.11ng/ml (0-4ng/ml). Histological examination of a trans-rectal biopsy showed features identical with that of the chest wall mass. Hormonal therapy with goserelin 10.8mg was commenced.

Despite the prophylactic anti-coagulation, he died on the 16th post operative day from pulmonary embolism. Post mortem examination revealed a massive saddle embolus and widespread dissemination of the carcinoma with tumour nodules infiltrating the bladder and the surrounding soft tissues of the pelvis. There were similar metastatic nodules in the mediastinum and adjoining ribs. Histological examination of these metastatic nodules confirmed a common prostatic origin. The salivary glands were normal bilaterally.

Discussion

Primary and secondary neoplasms of the chest wall are rare, accounting for 1% of all neoplasia. There are varying aetiologies for these tumours, benign accounting for about 50%. Malignant primaries include Ewings sarcoma, osteosarcoma and chondrosarcoma. By far most chest wall tumours are primaries. Metastatic chest wall tumours account for 16% of all chest wall tumours.[1]

Prostatic carcinoma is the commonest genital malignancy affecting men in West Africa and elsewhere.[2] Chest wall metastases are extremely uncommon.[3][4] Chestwall metastases are even more uncommon in symptom free undiagnosed disease, as was the case in our patient.[4] Usual sites for metastatic disease include bone, lymph nodes, lung, bladder, liver and adrenal glands. [5] Metastases to almost every organ in the body have been reported. [4] There is evidence to show that bone, lung, and liver are the most frequent sites of distant prostate cancer metastases, and that retrograde venous spread to the spine is the mechanism. This process occurs early in the metastatic process. [6]

Routine screening for other possible “rare causes” must be sought at the pre-operative or neo-adjuvant work up for all men presenting with chest wall masses.

The patient's diagnosis was missed because a digital rectal examination and a PSA assay were overlooked in the pre-operative evaluation. Surgeons must be wary of using a referring doctor's report as the basis for therapy. Independent re-evaluation must be the rule. The judgment of our team was swayed in favour of this diagnosis as a possibility even though there was no clinical evidence of existing salivary gland pathology that had gone far afield.

Conclusion

A case of undiagnosed symptom free prostatic carcinoma masquerading as a giant anterior chestwall tumour is being reported. Though rare, such uncommon causes of chestwall tumours ought to be borne in mind during the evaluation of a chest wall mass in all men.

Rectal examination and PSA assay are mandatory in every male presenting for evaluation of a chestwall mass.

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Fig 1. Chest X ray in PA view showing tumour in upper chest



Fig 2. Axial chest CT scan showing tumour anterior and posterior to the sternum



Fig. 3 Saggittal CT reconstruction showing destruction of both sternal tables by tumour deposits