

Cardio-thoracic surgical experience in Gabon

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Abstract: Our experience in cardio-thoracic surgery focuses on thoracic activity. The minimum fare for traumatism, infectious pathology and tumoral pathology requires, for its improvement, the acquisition of a technical platform and of an adequate medical infrastructure, with a rational organisation of the care sequence. Vascular surgery calls for the training of qualified human resources, and the great demand in heart surgery calls upon the public powers for the construction of infrastructures, and the formation of necessary superstructures.

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Introduction

In Gabon, the specialty of thoracic surgery was established after the opening of Jeanne Ebori Foundation in Libreville in the 1980s. Vascular surgery was introduced about ten years later. The current infrastructure allows only closed heart interventions.

Dedicated cardiothoracic surgery including repair of congenital malformations and rheumatic disease, require transfer to hospitals outside the country. Therefore this report of our current experience will focus on the areas of thoracic and vascular surgery.

Thoracic surgery

Our experience of thoracic surgery in Gabon can be divided into three areas: trauma, infectious and neoplastic pathology.

Thoracic trauma

Presentation with thoracic trauma accounts for about 18% of thoracic surgeries, and for about one third of the

performed thoracotomies. Most common etiology are motor vehicle accidents (1). Victims are typically younger persons with average age about 40 (2). Male/female ratio is 2,5. Internal injuries are common and deep penetrating wounds are increasingly encountered. Many patients have respiratory and circulatory compromise. Treatment is complicated by limited infrastructure: In Gabon, as in Mali, median admission delay for thoracic trauma patients is three hours to four days. Patients are frequently transported by private vehicle. There is a lack of specialized medical transportation (3) (ambulances, mobile intensive care, helicopter) and inadequate technical equipment in many hospitals.

From 1998 to 2008, 34 cases of penetrating thoracic trauma were admitted to our service. Male represented 88.2% of cases. Hemothorax was the most frequent presentation (73.5% of cases). Usually, major thoracic trauma happened at night. Initial management of these patients required a team of experts with experience in Emergency, Resuscitation, and Radiology. After diagnosis and stabilization, the surgeon addressed the underlying injuries. Surgical treatment was successful in 90% of patients.

However, treatment predominantly involves thoracentesis and drainage (4), which represents about 37% of cases. Surgical interventions are performed in only 13% of cases, of which only 3% are performed on an emergent basis. The remaining 50% of patients are treated conservatively, mainly with simple observation. Mortality has decreased in our practice, reaching about 6%. Recovery is often associated with significant residual impairment (5).

Infectious pathology

In our experience in Libreville from 1980 to 2005 and in one retrospective study (n=24), pyothorax is most common in young adults with male predominance (6). The prevalence is to 4.9%. Smoking is a significant risk factor. Its frequency has doubled within a decade. Thoracic pain, cough and general malaise are the most common presentations. Diagnosis is difficult because of limited medical infrastructure. The most frequent causative bacteria are *Klebsiella pneumoniae*, but *Mycobacterium tuberculosis* remains a common etiology. Fifteen of 24 patients were treated with pleural chest tube draining, 5 with pleuro-pulmonary decortications and 1 with a Clagett type thoracostomy. Surgical intervention was performed in 41% (lobectomies, pneumonectomy).

Two of 24 patients died, secondary to septic shock and cachexia, respectively. Morbidity is significant with long hospitalization (up to 24 weeks) and functional respiratory recovery is frequently incomplete (7). In order to reduce the burden of disease, early treatment of purulent pleuritis and prevention of tuberculosis and HIV infections is necessary. In our social and material context, it is not possible to determinate the incidence of pyothorax in the population.

Lung tuberculosis is frequent among young patients, and smokers. Clinic presentation is dominated by respiratory symptoms and general malaise. Right lung involvement is more common. Diagnostic work-up typically includes chest radiography, gastric aspiration, sputum examination and skin testing. Pleurocentesis is frequently performed, but bronchoscopy, and computed tomography are rarely available. Lesions found in chest radiography are nodules, fibrosis and parenchymatous destruction. Typical treatment is pharmacological. Indications for surgery are extensive fibrosis and parenchymatous destruction. Major problems arise from the fact that cost of the diagnosis procedures and treatment are frequently out of reach for many of young patients with poor economic background.

Cavitary lung lesions can become infected with aspergillus. We have observed a case of lung aspergilloma with calcification in a 50-year-old patient, admitted for thoracic pains, cough with purulent expectoration and fever. The chest X-ray revealed a calcified opacity in a lung cavity. Draining was performed and the pus contained anaerobic bacteria. The histologic examination of a sample of the inferior right lobectomy was consistent with calcified aspergillosis. Such cases of contained aspergillosis are rare. In most cases, liquefaction is followed by expectoration (8).

We have observed other unusual parasite infection of the lung. These include lung bilharziosis caused by *Schistosoma haematobium*, which is rare, difficult to diagnose secondary to limitations in Ziehl staining (9). Another uncommon parasite is *Paragonimus westermani* causing lung distomatosis. This was found in a patient, who was operated for a suspected lung aspergilloma. However, after thoracotomy a living *Paragonimus* organism was identified in the sample of the superior right lobectomy (10,11).

Neoplastic pathology

From 1990 to 2005, our experience is dominated by bronchial, lung and esophageal cancer. In the case of patients with lung cancer, predominance is male (12) and major problems include significant delay in diagnosis and inadequate availability of diagnostic and surgical techniques, including bronchoscopy (13) and thoracotomy. Our experience includes 34 cases, with a relatively low age of 52 years. Epidermoide carcinoma is predominant (14). The diagnosis is typically made at an advanced 48.5% stage III, and 23.5% stage IV. Only 10 patients could be offered curative surgery, with only 8.8% of patients surviving beyond 6 months. Surgical intervention was performed in 41 % of cases and included lobectomies and pneumonectomy. This high mortality is explained by the late diagnosis and social and economic conditions of patients (15).

Esophageal cancer is a frequent pathology in Gabon. It is typically diagnosed at an advanced stage. In a 10-year-retrospect study, all the patients were dysphagic. Only 20% underwent an oesophago-gastrectomy according to Lewis-Santý's technique. All patients died within the 12 months (16). The follow up was difficult. Progress will require improved multi-disciplinary care with earlier access to both chemotherapy and surgical treatment approaches and better infrastructure for follow-up.

Vascular surgery

In Gabon, our service has been the only thoracic and vascular service. Also, the volume of our medical consultation and surgical intervention has been expanded. However, only some patients can pay the hospital cost, which remains a problem in the country.

From 1995 to 2001, our experience has been dominated by venous and lymphatic diseases. Arterial disease in our region is dominated by inflammatory conditions and complications from diabetes, with atherosclerotic arterial disease less frequent in our region (17).

Less frequent are also aortic dissection (18), syndrome of Cockett (19), and syndrome of Klippel Trenaunay (20).

Vascular surgical activity is dominated by vascular therapeutic interventions in the context of hemodialysis. From a series of 47 patients who underwent 53 AV-fistulas operated in our service: an arteriovenous fistula was performed to 41 patients and 6 patients were reoperated after occlusion or lack of function of the initial AV fistula. The early patency rate is 88%. In order to minimize invasiveness we perform these procedures with combined local anaesthesia and intravenous sedation (21).

Arteriovenous fistulae without graft materials is preferred in order to decrease risk of infections. For the same reason, we do not recommend using insertion of central lines or tunneled dialysis catheters. Kidney transplantation is the best treatment.

Further advances of our vascular surgery practice will require training of vascular specialists familiar with functional vascular investigations, the acquisition of materials including vascular prostheses, and improved surgical capacities. Another requirement is further training of radiologists in the area of vascular and endovascular imaging.

Conclusions

Our experience in cardio-thoracic surgery predominantly focuses on thoracic procedures, with a focus on traumatic, infectious, and neoplastic pathology. Further advances will require improved medical infrastructure and increased training of younger colleagues. Also critical is the need to improve access to treatment at an earlier stage for large parts of our population.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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