

Original Article

Epidemiology of Extremity Amputations in Yaounde-Cameroon

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SUMMARY

OBJECTIVES: The study was carried out to analyse the risks, the indications and complications of extremity amputations in Yaoundé-Cameroon

METHODOLOGY: This was a retrospective study of patients operated in the University Hospital Centre within a period of 15 years, 1st January 1996 to 31st December 2010. The variables studied were the age and sex of the patients, the risk factors for the extremity amputation, the indications of the extremity amputation, and the complications

RESULTS: The study was carried out on 123 files of patients aged 5 to 73 years with a mean age of 42 years. There were 72 patients of the male sex and 51 patients of the female sex. 128 amputations were realized with 90 (70.3%) in the lower extremity and 38 (29.7 %) in the upper extremity. Two patients had bilateral amputations and three patients had repeat amputations. There were 27 patients (21.5%) with postoperative complications dominated by stump infection followed by hematoma. The leading risk factor for amputation was diabetes (51: 41.5%) followed by ulcer (24: 18.8%) and vascular diseases (19 cases: 14.8%). Diabetic complication was the commonest cause for amputation (44: 35.8%) followed by gangrene from non infectious and infectious causes (35: 28.5%). One hundred and eleven (111) patients (90.2%) evolved favorably and were discharged. There were 11 (8.9%) deaths

CONCLUSION: In spite of complications and inconveniences of extremity amputations, they remain life saving means when health education towards foot care in diabetes, prevention of gangrene and proper management of diabetes and infections of the extremities have failed.

Key words: Amputation, diabetic foot, gangrene.

RESUME

OBJECTIFS La présente étude intitulée, «Epidémiologie des amputations à Yaoundé Cameroun », avait pour but d'analyser les risques, les indications, et les complications des amputations des membres à Yaoundé Cameroun.

METHODOLOGIE. Il s'agit d'une étude rétrospective réalisée à partir des dossiers de 123 patients opérés au CHU pendant une période de 15 ans allant du 1^{er} janvier 1996 au 31 décembre 2010. Les variables d'étude étaient l'âge et le sexe du patient, les facteurs de risque, les indications et les complications des amputations des membres.

RESULTATS. Cette étude a porté sur 123 dossiers de malade âgés de 5 ans à 73 ans avec un âge moyen de 42 ans. Il y avait 72 patients de sexe masculin et 51 patients de sexe féminin, un total de 128 amputations a été réalisé. 90 cas (70.3 %) étaient amputés du membre inférieur et 38 (9.7%) étaient du membre supérieur. Deux malades ont eu une amputation bilatérale et trois ont eu une reprise de l'amputation. Les facteurs de risques étaient dominés par le diabète (51 patients, 41,5 %) suivi de l'ulcère (24 cas, 18.8%) et de la maladie vasculaire (19 cas, 14.8 %) Les complications du diabète étaient la cause principale (44 cas, 35.8%) suivi de la gangrène infectieuse ou non infectieuse de l'amputation d'un membre. Vingt sept (27) patients (21.1 %) ont eu une complication postopératoire dominée par l'infection du moignon suivie de l'hématome. Cent onze (111) patients (90.2%) ont évolués favorablement et ont été sortis. Nous avons noté 11 (8.9 %) décès

CONCLUSION. Malgré les complications et les inconvenances de l'amputation des membres, la technique reste le seul moyen de sauvetage de vie ou du membre quand l'éducation pour la santé dans les soins du pied des diabétiques, la prévention de la gangrène, la prise en charge du diabète et des infections des membres ont échoué.

Mots clés : Amputation, pied diabétique, gangrène

INTRODUCTION

An extremity amputation entails the removal of a segment of the limb to save life or to save the limb. This leads to short and long term consequences. The short term consequences are related to complications like anemia, infection, and stump necrosis (1). The long term consequences are, on the other hand, related to the discouraging functional outcome since amputees scarcely afford prosthetic fittings and have problems of social rehabilitation reason enough to cause medical, psychological, economic and familial stress (1, 2). Some medical conditions when not properly managed predispose to amputation. Diabetes mellitus, ulcers of the leg, peripheral vascular disease and peripheral neuropathy are the leading ones (2, 3). In most studies, trauma is the leading cause of extremity amputation followed by diabetes complications (1, 2, 3) This study was carried out to analyse the risks, the indications and the complications of extremity amputations in our centre.

MATERIAL AND METHODS

This was a retrospective study carried out at the University Hospital Centre (UHC) Yaoundé on patients who had undergone an extremity amputation in the service of surgery within a period of 15 years from the 1st of January 1996 to the 31st of December 2010. The variables studied were the age and sex of the patients, the risk factors, reasons for amputation, the site and the complications. Were excluded the patients that died within surgery and the patients that were lost to follow up before complete healing of the wounds.

RESULTS

A total of 129 files of patients were registered among which 123 completely satisfied the inclusion criteria. Two patients had bilateral amputation of the femur and three had a repeat amputation giving a total of 128 amputations. The ages of the patients ranged from 5 to 73 years with a mean age of 42 years. The predominant age group was 31-50 years (23.7%). There were 72 patients of the male sex and 51 patients were of the female sex. Below 15 years, more patients of the male sex were amputated while above 60 years, more female patients were amputated.

The risk factors showed diabetes as leading reason for amputation (51 patients, 41.5%) followed by ulcer (24 patients, 18.8%) and vascular disease (19 patients, 17.8%) (Table 1) One case of amputation followed failed vascular repair.

Diabetic complications were the commonest cause of extremity amputation (44 cases, 35.8%) followed by gangrene from non infectious and infectious causes (35 cases, 28.5%). Industrial and domestic accidents and firearms, and burns accounted only for 6 cases (4.9%) (Table 2).

Ninety extremity amputations (70 %) were in the lower extremity with 38 below knee amputations representing 29.7% of the total extremity amputations. Almost half of all amputations in the upper extremity involved the fingers (Table 3)

There were 27 patients (21.1%) with post operative complications dominated by stump infection (12 cases, 44.4%) followed by hematoma (5 cases, 18.5%), hemorrhage (4 cases, 14.8%), gangrene (4, 14.8%), and thromboembolism (2 cases, 7.4%); most of the patients (111, 90.2%) evolved favorably and were discharged to continue rehabilitation as out patients. None of the patients accepted planning for prosthesis. Eleven deaths (8.9%) were noted. Forty nine patients (39.8%) spent more than 50 days in the hospital with the longest stay of 120 days.

DISCUSSION

There is no documentation as to the epidemiology of extremity amputations in Cameroon. Numerous authors in the western world have shown that the leading cause of extremity amputation is trauma. (1, 2, 3). Trauma may also be the leading cause in Cameroon considering the frequentation of the hospital by road traffic accident and industrial accident victims. The University Hospital Centre is virtually a reference centre for peripheral hospitals. Most initial accident victims in Yaoundé are managed in other hospitals.

It has been well documented that diabetes mellitus especially type II has an insidious cause and only manifests itself when a complication has set in or can only be diagnosed when blood sugar tests for other conditions show diabetic levels (12). Hence, most will report to the hospital only when the complications do not offer possibilities of recovering the limb. (12,13) Lower extremity surgical complication has been more commonly reported among patients of the lower socio-economic groups as they are more likely to be living in the rural areas with little or no health facilities and not likely to have insulin and oral diabetes medications (7,9,12,13). That is the reason why this study has the leading cause of extremity amputation to be linked to diabetic complications. This has been shown in the Kenyan study by Ogeng'o *et al* (3). However in patients below 15 years the leading cause of amputation is trauma followed by malignant tumours. This is the pattern that has been reported in children by most studies (1,5,6).

The mean age of the patients was 42 years with an age range of 5 to 73 years. Majority of the patients were in the 31 – to 50 years age group. In the series where trauma is the leading cause of extremity amputation, the mean age is lower than the value in our study (1, 2, 4). This is probably due to the fact

that we had chronic causes for extremity amputation.

The mortality of 11 patients (8.9%) was comparable to other studies (2, 3, 9). The average hospital stay was longer due to the discouraging functional outcome. Less than 15 amputees could afford prosthetic fitting and social rehabilitation.

CONCLUSION

We conclude that the high lower extremity amputation is not different from results got in other studies. The mortality of 8.9% is relatively low especially as most of the causes of extremity amputation are chronic diseases.

There is need for health policies which are effective in controlling the risk factors especially for the control of blood sugar, foot care education, vigilant infection control and audit of congenital defects. This study was limited by inaccurate reporting, incorrect records, poor follow up and a small sample size. We recommend more extensive studies to come out with the common causes of extremity amputation in Cameroon.

Table 1. Risk factors for extremity amputation

Risk	Frequency	Percentage (%)
Diabetes	53	41.5
Ulcer	24	18.8
Vascular disease	19	14.9
Arterial hypertension	09	07.0
Smoking	05	3.9
Wound infection	04	3.1
Past amputation	128	100.0

Table 2: Causes of extremity amputation

Cause	Frequency	Percentage (%)
Diabetes	44	35.8
Gangrene	35	28.5
Tumours	16	13.0
Road traffic accidents	13	10.5
Congenital malformation	9	7.3
• Others	6	4.9
Congenital malformation		
Total	123	100%

The other causes were 3 cases of industrial and domestic accidents, 2 cases of burns and one case of gunshot.

Table 3. Types of extremity amputation

Extremity	Level	Type	Frequency	Percentage (%)
Lower	Below Knee	Leg	17	13.2
		Toe	15	11.7
		Toe	01	3.0
	Above Knee	Thigh	52	40.6
		Hip dislocation	2	1.6
Upper	Below elbow	Fingers	17	13.3
		Forearm	7	5.5
	Above elbow	Arm	13.	10.2
		Shoulder	1	0.8
		Disarticulation		
Total			128	100

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