

Presentation and Outcome of Acute Limb Ischaemia

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Abstract

Introduction: Outcome of acute limb ischaemia (ALI) is depends on the timely intervention. Delayed reperfusion of acute occlusive limb ischemia causes local and systemic serious consequences and is the main cause of morbidity and mortality in these patients.

Objective: To identify the factors impeding the management and outcome of ALI in a tertiary level hospital.

Materials and Methods: This cross sectional study evaluated reporting time and management of 42 patients with ALI between Jan 2016 to Jan 2018 in Combined Military Hospital Dhaka. Late presentation of ALI is defined as reporting of patient after 72 hours of symptoms. Time of presentation, grades of ischemia, co-morbidities, morbidities and mortality were recorded.

Results: During the study period, 42 patients were included, 25 female (59.5%) and 17 male (40.5%). Average age was 63 years (30 years – 87 years). 38 (90%) patients with lower limb ischaemia and 4 (10%) patients with upper limb ischaemia. 2 patients (4.7%) reported within 6 hours of symptom, 6 patients (14.3%) presented within 24 hours, 11 patients (26.3%) within 72 hours and 23 patients (54.7%) after 72 hours. On admission, 16 patients had grade III ischemia, 18 had grade IIb, 8 had grade IIa. 12 patients died (28.5%) and 19 (45%) patients had amputation. The risk factors of amputation were grade of ischemia, extremity (lower limb 45% vs. Upper limb 0%), age and co morbidity.

Conclusion: Late presentation of acute occlusive ischemia carries high morbidity and mortality. Lack of awareness and Negligence of symptoms delay the reporting time to hospital.

Key-words: Acute limb ischaemia, Reperfusion, Intervention, Embolectomy.

Introduction

Acute limb ischemia (ALI) is the result of a sudden deterioration in the arterial supply to the limb causing a

potential threat to the limb viability¹⁻⁴. An fortunately, the threat is not only to the limb, but these patients are also at high risk for death. Limb hypoperfusion results in systemic acid-base and electrolyte abnormalities that impair cardiopulmonary and renal function⁵. ALI is defined as clinical symptoms within 2 weeks of presentation^{6,7}. The event may be caused by thrombosis, embolism, peripheral aneurysm with embolus/ thrombosis, acute graft occlusion, iatrogenic intervention or by trauma. Outcome of acute limb ischaemia is depends on the timely intervention. Delayed reperfusion of acute occlusive limb ischemia causes local and systemic serious consequences and is the main cause of morbidity and mortality in these patients. In an ischaemic organ or tissue, following revascularization, a cascade of pathophysiological events often occurs known as reperfusion injury. This condition consists of two essential components: local events that can result in increasing damage from ischaemia and more widespread, systemic events that can result in secondary failure of organs and tissues remote from the ischaemic site. Late presentation of arterial occlusion was defined as patient reported to hospital 72 or more hours after initial manifestation of patient complaint related to the affected extremity⁸.

Materials and Methods

This cross sectional study evaluated time of reporting and management of 42 patients with ALI between Jan 2016 to Jan 2018 in Combined Military Hospital Dhaka. Time of presentation, Grades of ischemia on admission as per Rutherford classification, co-morbidities of patient, morbidities and mortality were recorded. Acute Ischaemia due to trauma and critical/chronic limb ischaemic patient were excluded. All patients were diagnosed clinically and confirmed by imaging and biochemical markers. All patients were categorized and managed as per Rutherford classification of Acute limb ischaemia.

Results

A total of 42 patients were included during the study period, and among them 25 female (59.5%) and 17 were male

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(40.5%) (Fig-1). The average age was 63 years (30 years – 87 years)(Table-I). 38 (90%) patients with lower limb ischaemia and 4 (10%) patients with upper limb ischaemia (Table-II). 2 patients (4.7%) reported within 6 hours of symptom, 6 patients (14.3%) presented within 24 hours, 11 patients (26.3%) within 72 hours and 23 patients (54.7%) after 72 hours (Table-III). On admission, 16 patients had grade III ischemia, 18 had grade IIb, 8 had grade IIa. None were found in grade I (Table-IV). Amputation was done in 19 (45%) patients; 9 patients with grade III ischaemia and 10 patients with grade IIb ischaemia. Among them, 4 patients died after amputation. The risk factors of amputation were grade of ischemia, extremity (lower limb 45% vs. Upper limb 0%), age and co morbidity. The rest were managed by mechanical thromboembolectomy (fogarty embolectomy) with fasciotomy followed by IV heparin and Oral Warfarin (Table-V). Total 12 patients died (28.5%). Among them, 7 patients refuse amputation or not fit for amputation, 4 patients died due to multi organ failure/sepsis after amputation, 1 patient died after embolectomy. The Mortality rate was 28.5%

Table-I: Age distribution of patients (n=42)

Age	Number of patients	Percentage
30-40	4	9,5
41-50	5	12
51-60	11	26
61-70	17	40,5
71-80	3	7
81-90	2	5

Table-II: Distribution of according to limbs affected (n=42)

Limbs	Number of patients	Percentage
Upper limb	4	10
Lower limb	38	90

Table-III: Patients Distribution of patients according to reporting time to hospital from onset of symptoms (n=42)

Reporting hours	Number of patients	Percentage
< 6	2	4.7
6-24	6	14.3
24-72	11	26.3
>72	23	54.7

Table-IV: Rutherford Classification on admission (n=42)

Category	Number of patients	Percentage
I	0	0
IIa	8	19
IIb	18	43
III	16	38

Table-V: Treatment modality (n=42)

Modality	> 72 hours	< 72 hours	Total	X ² = 22.38
Primary Amputation	18	1	19	df = 1
Embolectomy	5	18	23	P value < .001
Total	23	19	42	

Table-VI: Outcome of patients (n=42)

Outcome	> 72 hours	< 72 hours	Total	X ² = 22.38
Mortality/Amputation	18	1	19	df = 1
Life/Limb salvage	5	18	23	P value < .001
Total	23	19	42	

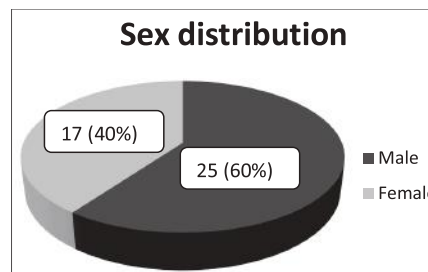


Fig-1: Sex distribution of the patients.

Discussion

Early intervention is the most important factor for favourable outcome in cases of ALI. Judicious patient selection is required on the part of treating surgeon and his team to decide whether the patient is a candidate for embolectomy/thrombectomy or amputation⁸. When compared to Trans Atlantic Vascular Society Consensus (TASC) II data, present study has none in class I as against 45% in TASC II, but 38% in class III, as against only 10% in TASC II⁵. This difference is probably because of lack of awareness regarding symptoms among both patients and medical professionals and non-availability of vascular specialist at all the places. Only 2 patients presented before the golden six hours, all of them had limb salvage⁹.

In this study, overall limb salvage was 55% and 45% patients underwent amputation. 18 patients out of 23 need primary amputations who presented after 72 hours, but limb could be salvage in 18 patients out of 19 who presented before 72 hours. Outcome is poor in late presentation patient. Fagundes et al have evaluated risk factors associated with increased mortality and morbidity, and they reported that ischemia time longer than 24 hour was associated with increased mortality and amputation¹⁰. Mortality rates for embolectomy in recent studies from literature vary from 8% to 25%, and amputation rates vary from 7% to 28%¹¹⁻¹⁵.

Ender et al found mortality rate as high as 28% in patient of non-traumatic ALI who presented late to the hospital¹¹ which is similar to our study mortality rate is 28.5% and most of them from late presentation group.

Conclusion

Late presentation of ALI results in high morbidity and mortality. Lack of awareness and negligence of symptoms usually delay the reporting time to hospital. Delay in referral also a contributing factor. To prevent serious consequences of acute limb ischemia it is essential to create awareness among general population by mass media publicity. Education and teaching of health professionals is important for early diagnosis. Development of referral system can reduce the reporting time of patient to appropriate place and person.

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