Original Article

Outcome of Embolectomy in Patients Presenting Late with Acute Limb Ischemia

Outcome of Embolectomy

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ABSTRACT

Objective: To determine the outcome of embolectomy in terms of limb loss and mortality in patients presenting late with acute limb ischemia.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Department of Surgery, Sheikh Khalifa Bin Zahyed Al-Nahyan Hospital Rawalakot attached with Poonch Medical College from June 2017 to June 2018.

Materials and Methods: Study was carried out on 100 patients. Patients were included through Non-probability, purposive sampling. Detailed medical history was taken from all the patients and they were examined clinically. Embolectomy was done for acute limb ischemia. Post-operatively patients were followed up. The patients were evaluated for limb loss. Data was collected on a structured questionnaire and analyzed in SPSS software version 16.

Results: The mean age of the patients was recorded as 45 years. There were78 (78%) male patients while 28 (28%) were female. Out of 72 male patients,06 (8.3%)patients lost their limbs and one patient (1.38%) died.

Conclusion: The cases in which patients are suffering from the critical ischemia , surgical embolectomy is the most suitable way to restore blood flow in the limbs.

Key Words: Embolectomy, Acute Limb Ischemia, Limb Loss

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INTRODUCTION

Acute limb ischemia (ALI) is considered to be very challenging emergencies when it is about the vascular surgery. The outcomes of interventions for ALI are linked to higher rates of mortality and morbidity[1]. Acute limb ischemia is caused because of interruption in blood flow in the artery. Due to this, limb ischemia is resulted that leads to pain, ischemic ulcerations and gangrene[4]. Surgical revascularization within first 6-12 hours just after the beginning of symptoms provide the most effective results, but the rate of mortality and the likely chances to lose the limb have made this problem debatable and can be associated with other diseases. Acutely developed ischemia of low intensity, early diagnosis and proper treatment are the basic needs for successful cure of the disease. However it is important to first identify the different conditions and start proper treatment needed that is considered as the primary healthcare treatment. The number of primary amputations could be lesser if ALI is managed in a proper way that needs proper education of the doctors who deal with such situations and receive the patients in emergency condition[2]. ALI with the prevalence rate of 1.7 in 10,000 in the common population is seen to be having the high mortality and the morbidity rate. The new therapeutic methods are used frequently to get the issue resolved.There are many factors that lead to increase in the rate of morbidity like fasciotomy as a result of chronic disease and it is reported to be up to 48%. Amputation rate has been 5-28% and for the mortality it is 7-25%. Different previous studies show that the time before the surgical intervention, the sensory and motor deficits and the tenderness of the calf are linked to poor prognosis[3]. Pain usually progresses as duration of ischemia increases but it may also diminish in case of recruitment of the collaterals or if it progresses to sensory loss. Identification of the underlying cause could be helpful to manage the cases. Acute arterial embolism could be treated by using surgical embolectomy. Emboli usually produce acute ischemia having the risk of limb loss. Patients with embolic occlusions might remember that how the disease started. An embolus can be treated directly to restore normal circulation in an artery without the collaterals. Emboli usually produce acute limb ischemia having the risk of limb loss.Patients with embolic occlusions might remember that how the disease started.

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MATERIALS AND METHODS

The study was conducted out at Sheikh Khalifa Bin Zahyed Al-Nahyan Hospital Rawalakot from June 2017 to June 2018.Many of the districts are catchment areas of this hospital. The hospital provides 24 hour emergency services and it has well equipped vascular surgery facilities as well.

Sample Technique: Non-probability, purposive sampling.

Inclusion criteria:

1. History of Diabetes
2. History of hypertension
3. History of Ischemic heart disease (without dyspnea, orthopnea)
4. Raised lipid profile

Exclusion criteria:

1. ASA grade 3 and above
2. Dyspneic patient
3. Above 70 years old patient
4. Patient on mechanical ventilation
5. Patient on inotropic support
6. Patients with concurrent venous thrombosis.
7. Skin mottling/discoloration at presentation.
8. Tender calf/compartment and fixed contracture at presentation.

Ethical Consideration: The study was carried out after formal approval by ethical committee of Poonch Medical College Rawalakot.

Data collection procedure: In this study, the variables included were age, limbloss, reperfusion injury and mortality. All the patients were clinically examined and their medical history was recorded. Acute limb ischemia was diagnosed. Embloectomies were done within 6 to 72 hours of injury. Post-operatively patients were monitored. The patients were discharged from the hospital after ten days depending upon the general condition of the patients and wound. All the patients were followed up on OPD basis for six months. The patients were evaluated for limb loss, reperfusion injury and mortality. Data was collected on a structured questionnaire.

Data Analysis: Data was entered and analyzed in SPSS software version 16. Qualitative variables like limb loss, and mortality were presented in form of frequency and percentage. Chi-square test was applied.

RESULTS

The mean age of the patients was recorded as 45 years. There were78 (78%) male patients while 28 (28%) were female. Out of 72 male patients,06 (8.3%)patients lost their limbs and one patient (1.38%) died.

Table No.1: Distribution of Gender

		Frequency	Percentage
Gender	Male	72	72%
	Female	28	28%
	Total	100	100%

In our study, 72(72%) patients were male while remaining 28 (28%) were female.

Table No.2: Distribution of saved and lost limbs

		Frequency	Percentage
Salved and lost limbs	Limbs salved	95	95%
	Limbs lost (Amputated)	5	5%
	Total	100	100%

In our study, 5 (5%) patients lost their limbs while the limbs of remaining 95 patients were salvaged.

Table No.3: Distribution of saved and lost patients

		Frequency	Percentage
Saved and lost patients	Patients saved	99	99%
	Patients lost	1	1%
	Total	100	100%

In our study, 1(1%) patient expired due to reperfusion injury while 99(99%) patients were saved.

DISCUSSION

There might be different reasons for the delay that are seen during different stages such as the patient delay, delay due to the doctor, waiting time for diagnosis, preparation time, anesthesia etc. It is needed to take proper action to avoid delay as it could be life threatening for the patient[7].

A total of 100 patients were treated during one year of our study period with a salvage rate of 95% within the time period of 16 hours. Abbot and William experienced the limb salvage rate of 93% with embolectomy within the time period of 12 hours. The limb salvage rate decreased to 78% and the mortality increase when the patients were presented after 12 hours and later once the symptoms were started[6,10].

Embolectomy is considered to be the first line of treatment when it is about the case of embolus and could be carried out using local anesthesia. Intra-arterial thrombolysis is also considered as the alternative treatment for this problem.

Embolectomies for the lower limbs using local anesthesia and the spinal anesthesia were done for the patients who needed popliteal emolectomy and the bypass. Total 85 patients were included in the study that underwent pre-emptive fasciotomy. All the compartments of the lower limb were opened because of suspicious injury.

The first embolectomy was done in 1911 by Fogarty and from that day embolectomy catheters are used [11]. The catheter embolectomy is considered to be a routine surgical procedure for revascularization of the patients who are affected by limb thromboembolic disease. The clinical attempts were made for revascularization. The

amputation rate is reported to reach 9-15%.[7]. Abbott and colleagues published the experience with the embolectomy providing the limb salvage rate of about 93% within the time period of 12 hours. The limb salvage rate decreased to 78% and the mortality increased when the patients were presented after the 12 hours and later once the symptoms were seen[10]. Many studies provided the linear relationship between delay in intervention and the results among patients who are affected by acute limb ischemia. In patients who present late after the symptoms appear, the decision for intervention is questionable. In such cases, the clinical insight based on the experience and the guidelines that are established with quick imaging analysis is compulsory for successful management.[5, 8, 9]

The role of revascularization in acutely ischemic limb where there is delay in treatment is controversial. In case of critical ischemia of the limbs, different clinical measures are needed to prevent the body from the risk of morbidity. The attempt made to revascularize is considered to be acceptable when the damage to arterial intima is little, when thrombi are not adherent to the intimaand with no secondary thrombus. Better results are seen for the reversal of acute ischemic limb in such cases. Though in different cases embolectomies are also performed after several days of acute limb occlusion, the reperfusion injury after revascularization need to be assessed and the patients who present late have the greater chances of reperfusion injury that might lead to limb loss and sometimes to death. So, it is important to avoid the delay in presenting the patient. It could be said that the earlier embolectomy within first 8 hours provide the better results and in some cases such embolectomies are also performed after few days once the acute occlusion is reported. It is also shown that in patients with arterial emboli, when the delay is more than 8 hours, chances of different complications of ischemia are increased but when the delay is for more than 7 days, the probability of complicationsis decreased[12].

The cases in which patients are suffering from critical limb ischemia, surgical embolectomy is the most suitable way to restore the blood flow in the limbs as compared to the process of thrombolysis as it might take several hours. [13]..

CONCLUSION

It is needed to consider several issues associated with ALI like the major errors that might arise due to lack of time during diagnosis, anticoagulation, documentation and emphasizing much on the limb salvage.

Author's Contribution:

Concept & Design of Study:	Malik Asrar Ahmed
Drafting:	Abdul Karim
Data Analysis:	Sultan Shah, Malik Mehmood Ahmed
Revisiting Critically:	Malik Asrar Ahmed, Abdul Karim
Final Approval of version:	Malik Asrar Ahmed

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Baril, Donald T, Virendra I. Patel, Dejah R. Judelson, et al. Vascular Study Group of New England. Outcomes of lower extremity bypass performed for acute limb ischemia. J Vascular Surg 2013;58(4):949-956.
2. Manojlović, Vladimir, Popović V, Nikolić D, Milošević D, Pasternak J, et al. Analysis of associated diseases in patients with acute critical lower limb ischemia. Medicins kipregled 2013; 66(1-2):41-45.
3. Mozaffar M, Afsharfard A, Malekpour F, Vaghardoost R. Embolectomy for acute lower limb ischemia. Med J Islamic Republic of Iran 2004; 18(2):131-134
4. Goldstein, Jeffrey A, Mishkel G. Choosing the correct therapeutic option for acute limb ischemia. Int Cardiol 2011;3(3).
5. Iyem, Hikmet, Eren MN. Should embolectomy be performed in late acute lower extremity arterial occlusions? Vascular Health Risk Management 2009;5:621.
6. Iqbal KM, Nadeem IA. Revascularization of late-presenting acute limb ischaemia and limb salvage. J Ayub Med Coll Abbottabad 2016;28(2): 262-266.
7. Ouriel K. Acute limb ischemia. In: Rutherfort RB, editor. Vascular surgery. 6th ed. Philadelphia: Elsevier; 2005.p.959–86.
8. Elliott JP Jr, Hageman JH, Szilagyi E, Ramakrishnan V, Bravo JJ, Smith RF. Arterial embolization: problems of source, multiplicity, recurrence and delayed treatment. Surg 1980; 88(6):833–45
9. Blecha MJ. Critical Limb Ischemia. Surg Clin North Am 2013; 93(4):789–812.
10. Abbott, William M, Maloney RD, McCabe CC, Lee CE, Wirthlin LS. Arterial embolism: a 44 year perspective. Am J Surg 1982;143(4):460-464.
11. Fogarty TJ. Management of arterial emboli. Surg Clin North Am 1979;59(4):749–53.
12. Elliot JP, Hageman JH, Szilagyi DE, Ramakrishnan V, Bravo JJ, Smith RF. Arterial embolization: Problems of source, multiplicty, recurrence and delayed treatment. Surg 1980; 88:833–845.
13. Justin V, Dirrick B, Gilbert R. Upchurch, Christopher J. Sonnenday. Clinical Scenarios in Surgery: Decision Making and Operative Technique Lippincott William & Wilkins 2012.