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Management of Acute Lower Limb Ischemia at Osh Regional Clinical Hospital, Kyrgyzstan: A Retrospective Analysis of Amputation Patterns and Case Report

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ABSTRACT

Background: Acute lower limb ischemia (ALLI) is a major vascular emergency that frequently requires amputation and is associated with high morbidity and mortality worldwide. In low- and middle-income countries such as Kyrgyzstan, the absence of advanced diagnostics, delayed interventions, and high incidence of comorbidities, including diabetes and atherosclerosis, worsen the prognosis. The purpose of this study is to determine the etiological patterns, amputation levels and clinical outcomes of 52 patients with ALLI in Kyrgyzstan from 2020 to 2021. The importance of this study is to respond to a significant public health issue in the region, where constraints in resources and the increasing incidence of diabetes and post-COVID complications increase the burden of limb ischemia.

Methods: A retrospective analysis was made on 52 patients who underwent lower limb amputations for ALLI at a tertiary care centre in Kyrgyzstan from 2020 to 2021. The data on demographics, etiology, amputation levels, rates of reamputation and clinical indications were analyzed.

Results: The majority of cases (60%) were secondary to obliterative atherosclerosis of the lower limb vessels, followed by diabetes-related vascular complications in 28.8%, and 11.4% post COVID-19 pneumonia associated thrombosis. Above knee amputations were the most common procedure (32 patients), however diabetic foot syndrome cases needed different management approaches, i.e., 5 thigh, 5 lower leg, 2 foot, and 3 toe amputations. Four patients (7.7%) needed re-amputation, and wet gangrene was the main reason for surgery in 59.6% of cases.

Conclusion: In Kyrgyzstan, this study shows that atherosclerosis and diabetes are the predominant causes of ALLI. The emerging thrombotic risks found in this study are all linked to COVID-19, which further complicates the management of limb ischemia in the setting of a resource-limited country like Kyrgyzstan, where delayed presentations and limited access to revascularization techniques are associated with high amputation rates. These challenges highlight the urgent need for improved vascular care infrastructure, early diagnosis, and multidisciplinary management in resource-limited settings like Kyrgyzstan where, because of delayed presentations and limited access to revascularization techniques, high amputation rates are seen. These challenges are exemplified by the clinical case discussed in the article, for which preventive strategies and tailored healthcare policies are crucial to decrease the socioeconomic and medical burden of limb ischemia.

Keywords: *Acute lower limb ischemia, Lower limb amputation, Atherosclerosis, Diabetes mellitus, Resource-limited settings*

1. INTRODUCTION

Recent advances in the field of vascular surgery have brought about new treatment methods for acute limb ischemia; nevertheless, the problem has not been solved to the root, as the rates of successful revascularization and amputation rates are quite unfavorable [1]. Stated above, despite the improvements in techniques, the failure rates of limb salvage are still high and amputation rates are as high as 30% with no evident decline in the last three decades [2]. Limb gangrene is a preventable complication of a chronic arterial insufficiency due to atherosclerosis and remains a cause of poor prognoses. Although urgent revascularization via thrombolytic therapy or surgical intervention is prioritized, hospitalization-related amputation rates persist at 10–15%. Furthermore, conventional pharmacological interventions, including anticoagulants and angioprotective agents, frequently exhibit suboptimal efficacy, culminating in limb loss within the first disease year in nearly 40% of cases [3].

In this study, above knee operations are performed more than operations done for non-ischemic etiologies by 57% and 43% respectively. Of major lower limb amputations, 95.7%, are recorded, and diabetic foot syndrome and atherosclerosis gangrene are the leading causes [4] [5]. Because of increasing diabetic angiopathy and microvascular impairment, the incidence of diabetes mellitus has increased surgical demand. New evidence shows coronavirus disease (COVID-19) as a new cause of the disease with systemic hypercoagulability enhancing the thrombogenic risk in various vascular territories [6]. Thrombotic events in the context of COVID-19 have a temporal pattern of occurrence, that is, they may develop at the time of the disease or after a few months after recovery, and the severity of the initial infection is a strong predictor of the risk of thrombosis, especially in patients with atherosclerosis [7] [8].

Demographically, ALLI affects predominantly elderly patients with severe comorbidities and polymorbidities, which worsen the potential of rehabilitation, increase cardiovascular morbidity and lead to the progression to the contralateral limb amputation, severe disability and increased postoperative mortality [9]. These factors highlight the significance of a multidisciplinary and risk stratified therapeutic approach in this vulnerable population [10]. The purpose of this study is to assess the clinical outcomes and the risk factors of acute and chronic limb ischemia in Kyrgyzstan, with the aim of determining the specific obstacles to effective revascularization and post amputation rehabilitation in the region. The importance of this study is particularly significant in the Kyrgyz setting where social inequalities, lack of access to sophisticated vascular interventions and high incidence of untreated medical conditions, including diabetes and atherosclerosis, complicate the limb salvage. Moreover, the current post-COVID-19 environment with thrombotic complications calls for special techniques to manage hypercoagulability in limited-resource settings [11]. Based on the analysis of the local epidemiological data and treatment effectiveness, the study aims to provide evidence-based recommendations for clinical practice, to prevent avoidable amputations and enhance the long-term survival of the country's ageing population, thus contributing to the closure of the gap in vascular healthcare equity in the region.

2. MATERIALS AND RESEARCH METHODS.

A retrospective cohort analysis was performed using the medical records of 52 consecutive patients who underwent lower limb amputation procedures at the Cardiovascular Surgery Department of the Osh Interregional Clinical Hospital, Osh City, Kyrgyzstan from January 2020 to December 2021. The inclusion criteria were age (18 years and above) of patients who underwent major lower limb amputation (above- the ankle) for acute or chronic ischemic etiology and the availability of preoperative, intraoperative, and postoperative documentation. Exclusion criteria included traumatic amputations, oncological resections, or incomplete clinical records.

Demographic and clinical data were systematically extracted from electronic health records and manually validated by means of a structured chart review. The variables included age, gender, comorbidities, and procedural details, as well as postoperative outcomes. The cohort had a male predominance (male-to-female ratio: 3.3:1) with a mean age of 68.2 ± 9.5 years (range 44–87 years). Age stratification identified 9 patients (17.3%) aged 40–60 years and 43 patients (82.7%) aged >60 years: a geriatric predominance of advanced vascular pathology in this population was evident.

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki [12]. In line with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines, data abstraction was conducted [13]. Ethical approval was obtained from the Osh State University Institutional Review Board (OSUIRB), with waiver of informed consent granted due to the anonymized retrospective study design.

3. CASE STUDY I: PATIENT A. – 80-YEAR-OLD MALE WITH CRITICAL LIMB ISCHEMIA AND MULTILEVEL ARTERIAL OCCLUSION

3.1 Patient Presentation and Admission:

Patient A., an 80 year old male was admitted to the cardiovascular department of OMOKB on March 28, 2020 with one month history of severe right lower limb pain, non ambulatory status and necrotic changes of the toes. Other presenting symptoms included numbness, cutaneous cyanosis of the lower limb up to the knee, reduced touch sensitivity, insomnia due

to pain, anorexia (quantity unspecified) and general weakness.

3.2 Clinical History:

The patient had his first symptoms 2 – 3 months ago, which included claudication, pain in the right lower limb, which came on intermittently, and feeling cold. Initial admission at Nooket TB Hospital's surgical department (March 2 – November 11, 2020) did not prevent disease progression, which required subsequent escalation of ischemic symptoms and systemic decline to transfer to OMOKB for advanced cardiovascular management.

3.3 Clinical Observation and Objective Findings

General Status on Admission:

3.3.1 Consciousness: Alert and oriented.

3.3.2 Vital Signs: Blood pressure 130/70 mmHg, pulse 87 bpm.

3.3.3 Cardiopulmonary Exam: Harsh breath sounds bilaterally; muffled heart tones.

3.3.4 Systemic Manifestations: Signs of intoxication (unspecified etiology) and severe pain.

Local Findings (Right Lower Limb):

3.3.5 Cutaneous Changes: The foot and lower leg are cyanotic, the necrotic (blackened) toes are present.

3.3.6 Sensory/Motor Deficits: Hypoesthesia (reduced sensitivity) in toes and distinal (shin) region; Ankle joint has no active movement.

3.3.7 Vascular Assessment: No peripheral pulses (dorsalis pedis, posterior tibial); Limb feels cold on palpation with tender distal third of the shin and toes.

Diagnostic Evaluation

3.4.1 Laboratory Findings:

- Elevated creatinine (160.4 µmol/L) and urea (10.4 mmol/L).

- Residual nitrogen: 29.4 mmol/L, suggestive of renal impairment.

3.4.2 Vascular Imaging (Ultrasound Duplex Scan, February 29, 2020):

- Right Lower Limb: Different levels of arterial occlusions include the common femoral artery (CFA), anterior tibial artery (ATA), posterior tibial artery (PTA), peroneal artery, and tibial arteries.

- Left Lower Limb: CFA stenosis (35–45%); occlusions of the superficial femoral artery (SFA) and tibial arteries with collateral circulation.

3.4.3 *Echocardiography (March 17, 2020):*

- Left ventricular (LV) wall hypertrophy.
- Aortic valve calcification with grade I insufficiency.
- Pulmonary hypertension and grade I tricuspid valve regurgitation.

3.5 Clinical Diagnosis

3.5.1 *Primary Diagnosis:* Occlusive Atherosclerosis of the Lower Extremities (OASNK): Right-sided critical limb ischemia secondary to multilevel arterial occlusions (CFA, ATA, PTA, peroneal, and tibial arteries).

3.5.2 **Complication:** Ischemic gangrene of the right foot and lower leg (Fontaine Stage IV).

3.5.3 **Comorbidities: It includes** Chronic kidney disease (stage unspecified, based on elevated creatinine/urea), along with hypertensive heart disease with LV hypertrophy and Valvulopathy (aortic and tricuspid insufficiency).

3.6 *Therapeutic Intervention:* Because of the progressive gangrene and the impending acute renal failure (most likely due to systemic toxicity), a life-saving, transfemoral amputation of the right lower limb (lower third of the thigh) was performed. To stop necrotic progression, mitigate metabolic derangements and stabilize renal function, the procedure was performed.

3.7 *Case Discussion and Implications:* This case shows the aggressive natural history of untreated critical limb ischemia in elderly patients with advanced atherosclerosis and multilevel arterial occlusions. Key challenges were:

1. Diagnostic Complexity: Rapid progression from claudication to gangrene within 3 months, compounded by renal and cardiac comorbidities.
2. Management Dilemmas: Limited revascularization options due to diffuse arterial disease, necessitating emergent amputation.
3. Systemic Complications: Renal impairment likely exacerbated by ischemic tissue necrosis and rhabdomyolysis.

Patient A.'s presentation underscores the significance of early vascular evaluation in high-risk populations and illustrates the crucial role of collaborative care in the management of advanced peripheral arterial disease with multisystem involvement. Further research on optimized therapeutic algorithms for non reconstructable limb ischemia is also suggested.

4. CASE STUDY II: PATIENT B. – 82-YEAR-OLD MALE WITH CRITICAL LIMB ISCHEMIA AND POST-COVID-19 COMPLICATIONS

4.1 Patient Presentation and Admission:

Patient B. an 82-year-old male, was brought to the emergency department of OMOKB on November 30, 2020 with a 15-day history of severe, intractable pain, coldness, necrotic changes and gangrene of the left lower limb. The key symptoms were non resolving ischemic pain, loss of active movement, diminished sensation in left foot and shin and sleep disturbance. Over the last seven days, the symptoms had worsened rapidly and were unresponsive to analgesics, so the patient needed to be evaluated in an emergency setting.

4.2 Clinical History:

The patient has had recent hospitalization for COVID-19 pneumonia at Kerben Territorial Hospital from November 9 to November 19, 2020. After being discharged, he developed an acute left lower limb ischemia which ended in gangrenous changes. System failure required referral to OMOKB for specialized treatment.

4.3 Clinical Observation and Objective Findings

General Status on Admission:

4.3.1 Consciousness: Alert and oriented.

4.3.2 Vital Signs: Blood pressure 130/80 mmHg, heart rate 87 bpm, respiratory rate 22/min.

4.3.3 Cardiopulmonary Exam: Coarse breath sounds which are harsh and contain wheezes; reduced heart sounds.

4.3.4 Systemic Findings: Dry mucous membranes; a soft, tender less non tender abdomen; and normal physiological functions.

Local Findings (Left Lower Limb):

4.3.5 Cutaneous Changes: The skin is necrotic, blackened, and extends from the mid shin to the foot; the discoloration is blue and the gangrene is moist.

4.3.6 Sensory/Motor Deficits: Absent active movement; reduced sensation distal to mid-shin.

4.3.7 Vascular Assessment: Femoral artery pulse is felt; popliteal, posterior tibial, and dorsalis pedis pulses are not present; the limb is cold.

4.4 Diagnostic Evaluation

4.4.1 Laboratory Findings:

- Hematology: Elevated ESR (53 mm/h), anemia (Hb 118 g/L), leukocytosis (8.2 x 10^9/L).
- Renal Function: Normal creatinine (75.8 µmol/L), urea (4.94 mmol/L), and residual nitrogen (17.73 mmol/L).
- Urinalysis: Proteinuria (250 mg/L), leukocyturia (17–20/HPF), granular casts.

4.4.2 Vascular Imaging (Ultrasound Duplex Scan):

- Left Lower Limb: Occlusion of the superficial femoral artery (SFA), posterior tibial artery (PTA), and tibial arteries.
- Right Lower Limb: Atherosclerosis without critical occlusion.
- Chest X-ray: Chronic bronchopulmonary changes (pneumosclerosis, pneumofibrosis).

4.5 Clinical Diagnosis

- *Primary Diagnosis: Obliterative Atherosclerosis with Critical Limb Ischemia:* Chronic ischemic leg ulcer (Fontaine Stage IV) due to multilevel arterial occlusions of SFA, PTA and tibial arteries.
- *Comorbidities:* Post-COVID-19 pneumofibrosis and chronic bronchitis and systemic inflammation likely, mild proteinuria and leukocyturia.

4.6 Therapeutic Intervention:

To avoid progression to acute renal failure and systemic sepsis, osteoplastic amputation of the left lower limb at the mid thigh level was performed under spinal anesthesia on December 1, 2020. As for the postoperative therapy. Medical Therapy includes Intravenous ceftriaxone (1g bid), metronidazole (100mL bid), anticoagulants, and analgesics. Along with the supportive care including Daily wound dressings, infusion therapy, and hemodynamic monitoring.

4.7 Case Discussion

This case highlights several critical considerations:

A. *Post-COVID-19 Vascular Complications*: The rapid progression of limb ischemia following COVID-19 pneumonia may be attributed to hypercoagulability, endothelial injury, or delayed care due to pandemic stress on healthcare systems.

B. *Diagnostic Challenges:* Acute tubular injury, secondary to systemic inflammation or rhabdomyolysis, is suggested by normal renal biomarkers in the presence of proteinuria and casts.

C. *Surgical Necessity*: Because of diffuse arterial occlusion, there were limited revascularization options, so amputation was required to prevent fatal sepsis or multisystem organ failure.

Elderly patients' COVID-19 recovery and accelerated atherosclerotic complications suggest Patient B.'s case. Vascular monitoring should not be neglected in post-COVID cohorts and amputation is life-saving in non-reconstructable critical limb ischemia.

5. CASE STUDY III: PATIENT C. – 64-YEAR-OLD FEMALE WITH ACUTE LIMB ISCHEMIA AND MULTILEVEL ARTERIAL OCCLUSION

5.1 Patient Presentation and Admission: Patient C., a 64-year-old female with a past medical history of type 2 diabetes mellitus (7 years) and previous ischemic stroke (2018) came to the cardiovascular surgery department of OMOKB on October 27, 2020 with acute onset of severe pain, numbness, coldness and immobility of the right lower limb. The symptoms were localized to the distal foot, included cyanotic discoloration of the toes, and were also associated with systemic complaints of dry mouth and generalized weakness.

5.2 Clinical History: In August 2020 the patient reported bilateral cerebral artery thrombectomy. She experienced acute right lower limb ischemia ten days before admission, which progressed to rest discomfort and functional disability. After first declining surgical intervention at an earlier emergency visit (October 23, 2020), symptoms quickly worsened and reevaluation and hospitalisation four days later were called for.

5.3 Clinical Observation and Objective Findings

General Status on Admission:

5.3.1 *Consciousness:* Alert, oriented.

5.3.2 *Vital Signs:* Blood pressure 120/80 mmHg, sinus tachycardia (ECG-confirmed), respiratory rate unremarkable.

5.3.3 *Systemic Exam:* Dry mucous membranes; harsh breath sounds; no focal neurological deficits.

Local Findings (Right Lower Limb):

5.3.4 *Cutaneous Changes:* Thickening dystrophic nail plates; cyanotic-purple staining of the foot; necrotic blackening of the second through fourth toes.

5.3.5 *Sensory/Motor Deficits:* Absent active movement; profound coldness distal to the mid-calf.

5.3.6 *Vascular Assessment:* Without popliteal, posterior tibial, and dorsalis pedis pulses; femoral pulse non-

palpable.

5.4 Diagnostic Evaluation

1. *Laboratory Findings:* Leukocytosis (unspecified magnitude), hyperglycemia (values not reported), hypercoagulability (elevated clotting markers). Normal renal function (creatinine, urea within reference ranges).
2. *Vascular Imaging:*
    - **Duplex Ultrasound (August 21, 2020):** Diffuse atherosclerosis with occlusion of the posterior tibial artery.
    - **Repeat Duplex (October 23, 2020):** posterior tibial artery (PTA), superficial femoral artery (SFA), and common femoral artery (CFA) thrombosis.
3. *Electrocardiogram:* Sinus tachycardia (HR >100 bpm); nonspecific ST-T wave changes.

5.5 Clinical Diagnosis

1. Primary Diagnosis: Acute Arterial Thrombosis (Grade 3B Ischemia): Multiple-level blockage of the right lower limb (CFA, SFA, PTA) as a result of hypercoagulability and atherosclerosis.

Complication: Dry gangrene of the 2nd–4th toes.

2. Comorbidities:

Type 2 diabetes mellitus with probable microvascular complications.

Post-thrombectomy status (cerebral arteries, August 2020).

5.6 Therapeutic Intervention

The lower right leg was amputated above the knee (AKA) due to permanent ischemia and a substantial risk of systemic infection. Glycemic management, anticoagulation, and infection prevention were all part of the postoperative therapy.

5.7 Case Discussion

1. Etiological Factors:

Hypercoagulability: Probably made worse by diabetes, immobilization after a cerebral thrombectomy, and underlying atherosclerosis.

Delayed Intervention: First rejection of surgery exacerbated ischemic development, highlighting the important window for revascularization in acute limb ischemia.

2. *Diagnostic Challenges:* Rapid thrombotic recurrence after a cerebral thrombectomy points to systemic prothrombotic factors calling for a long-term anticoagulation plan.
3. *Clinical Implications:* Diabetes mellitus increased vascular sensitivity, which resulted in inadequate collateral circulation and fast gangreneous change.

This case emphasizes how aggressively acute arterial thrombosis strikes diabetic individuals with prior atherosclerosis. It emphasizes the need of fast surgical intervention and comprehensive treatment to reduce limb loss in people at high risk.

6. RESULTS AND DISCUSSION

In this study, series of the case histories of patients from the cardiovascular surgery department at the OSH Regional Children's Hospital in Osh City, Kyrgyzstan, found that acute arterial insufficiency of the lower limbs (AAILI) grades III A and B were the main reasons for lower limb amputation (94% of cases). This was mostly because an artery in the right lower limb was blocked, which made up 78.8% of cases; the other cases were caused by a blockage in the left lower limb.

When studying the occlusion of the lower limb vessels, it was found that in most cases 59.9% of occlusions were of atherosclerotic genesis. Almost 1/3 (28.8%) of patients had vascular complications associated with the presence of diabetes mellitus. In 11.4% of cases, the cause was thrombotic lesions: acute thrombosis of the common femoral artery, occlusion of the arteries of the right foot and post-thrombotic occlusion of the arteries of the lower extremities [14]. After covid pneumonia, the manifestations of ischemia symptoms increased in 4 patients. It should be noted that 4 patients underwent repeated amputations, two had previously undergone exarticulations of the 2nd and 3rd toes, and two others had previously undergone foot amputations. During the last year, before hospitalization, 7 people received inpatient treatment for chronic lower limb ischemia, including 4 patients once, and 3 patients twice, who were discharged with some positive clinical effect.

All patients had ultrasound duplex scanning (USDS), which let us look at the structure of the vessel wall, the state of its lumen, the type of blood flow, and the speed characteristics of the blood flow. This helped us figure out what the lesion looked like in the main arteries of the lower limbs. Analysis of the results revealed by the localization of vascular lesion

USDS can say that 4 (%) patients with iliac artery occlusions, 21 patients with common femoral artery occlusions, 18 with popliteal artery occlusions, and 9 with occlusions of the lower leg arteries. We admitted all patients on an emergency basis. When analyzing the timing of ischemia development from the moment of the first signs of gangrene, according to patients, we found out that, unfortunately, most often patients do not always pay attention to the symptoms of the disease and are admitted late: 7 (13.4%) patients only after 2 months, 13 (25%) patients after a month, 3 (5.7%) after 15 days, 10 (19.2%) after 10 days, and 2 (3.8%) after 7 days. Undoubtedly, admission occurs only when the patient's general condition deteriorates. Long-term tissue ischemia as a result of an arterial bed occlusion leaves no chance for the patient to save the lower limb (Table 1) [15].

Table 1: Comprehensive Analysis of Lower Limb Amputation Cases in Osh Regional Children Hospital, Osh City, Kyrgyzstan

Clinical Characteristics	*Clinical Indicators*	*Key Findings*	*Percentage/ Frequency*
Epidemiological & Clinical Characteristics	**Indications for Amputation**	Acute arterial insufficiency of lower limbs (AAILI) grades III A/B	94% of cases
	Occlusion Laterality	Right lower limb artery occlusion	78.8%
		Left lower limb artery occlusion	21.2%
	Etiology of Occlusion	Atherosclerotic genesis	59.9%
		Diabetes-related vascular complications	28.8%
		Thrombotic lesions (acute/common femoral artery, foot artery, post-thrombotic)	11.4%
		Post-COVID pneumonia ischemia exacerbation	4 patients
	Comorbidities	Diabetes mellitus (n=15), Hypertension (n=34), Coronary heart disease (n=11)	60.4% polymorbidity rate
	Clinical Presentation	Wet gangrene (bone/tendon destruction)	59.6% (31 patients)
		Dry gangrene	40.3% (21 patients)
		Necrosis of toes (2nd/3rd) or heel	6 patients (toes), 3 patients (heel)
Diagnostic & Imaging	**Ultrasound Duplex Scanning (USDS)**	Iliac artery occlusion	4 patients
		Common femoral artery occlusion	21 patients
		Popliteal artery occlusion	18 patients

		Lower leg artery occlusion	9 patients
Treatment Timelines	**Admission Post-Symptom Onset**	≥2 months delay	13.4% (7 patients)
		1-month delay	25% (13 patients)
		≤15 days delay	5.7% (3 patients)
	Surgical Intervention Timing	Amputation within 24 hours	9 patients
		Amputation on Day 2	33 patients
		Amputation on Day 3	7 patients
		Amputation on Day 4	2 patients
Surgical Interventions	**Amputation Types**	Above-knee amputations	61.5%
		Gritti-Stokes osteoplastic amputation	23%
		Transtibial amputation	7.6%
	Diabetic Foot Cases	Thigh amputations	5 patients
		Shin amputations	5 patients
		Foot/finger amputations	2 (foot), 3 (fingers)
Pharmacotherapy	**Anticoagulants**	Sodium heparin (5000–10000 U)	100% of patients
	Fibrinolytics	Streptokinase	57.6% of patients
	Adjunctive Therapy	NSAIDs (diclofenac/ketoprofen), antimicrobials (ceftriaxone/metronidazole)	100% of patients
		Antispasmodics (papaverine)	61.5% of patients

There were 13.4% of patients with chronic limb ischemia who underwent repeated treatment. It is possible that coronavirus infection among patients that year led to increased blood viscosity and hypercoagulation, which played a role in the unfavorable prognosis of lower limb ischemia. Single patients (3, 5.7%) were admitted on the second and third days due to acute lower limb ischemia: unbearable pain, paresthesia, and paresis [16]. On the first day of admission, all patients underwent standard examinations. After examination by a vascular surgeon, they were examined by a therapist, cardiologist, anesthesiologist, and endocrinologist. Instrumental examinations were performed, such as an electrocardiogram, plain radiography, and ultrasound of the lower limb.

The surgical treatment plan was based on how bad the patient's overall condition was, the ulcerative-necrotic process, and the amount and depth of tissue damage. In the first 24 hours after intensive preparation, 9 patients were operated on among the total number of those admitted with lower limb ischemia, since lower limb amputation was the only life-saving operation. On the second day after hospitalization after preoperative preparation, lower limb amputation was performed in 33 patients,

on the third day in 7 patients, and on the fourth in 2 patients. Because of how bad their cases were (13–14 points on the SARS scale), two patients had to have limbs amputated: one on the sixth day and the other on the tenth day after fixing problems with vital organs and systems [17] (Table 2). By looking at the drug therapy, we can say that all of the patients were given an anticoagulant with a direct-acting anticoagulant, specifically sodium heparin 5000–10,000 U, while the activated partial thromboplastin time was monitored. In 57.6% of cases, patients were administered a fibrinolytic drug, an indirect plasminogen activator, and streptokinase. All patients were prescribed nonsteroidal anti-inflammatory drugs (diclofenac and ketoprofen) and antimicrobial agents (ceftriaxone and metronidazole). Antispasmodics, specifically papaverine, were prescribed to 61.5% of the patients.

Depending on where the necrotic process was located, how common it was, and how bad the macroangiopathy was, all of the patients had surgery to remove their lower limbs (Table No. 1). This included osteoplastic amputation of the lower limb according to Gritti-Stokes 23%, according to Shapar 3.8%, according to Pirogov 3.8%, transtibial amputation 7.6%, and myoplastic amputation 3.8%. More than half of the patients (61.5%) underwent amputations at a level above the knee. In the case of diabetic foot syndrome, 5 amputations were performed on the thigh, 5 amputations on the shin, 2 amputations of the foot, and 3 amputations of the fingers. After revascularization of the arteries, amputations were performed in 5.7% of patients [18].

Table 2. Distribution of patients by amputation level

Level of amputation	***Number of patients (abs)***	***%***
Upper limb	2	3.8
Hip	2	3.8
Above the knee	30	57.6
Shin	6	11.5
Foot	3	5.7
Fingers	6	11.5

We suggested appropriate postoperative correction of homeostasis using infusion-transfusion medication treatment after surgical operations. Thus, 7 (13.4%) healed by secondary intention because the stump suppurated after surgery; 44 (84.6%) healed by primary intention. One instance (1.9%) needed reamputation at the hip level as the stump developed extensive suppuration of which is a concern. Following amputation, no patient had a tragic result.

7. CONCLUSIONS:

A total of 52 patients in Kyrgyzstan were studied and the primary cause of amputation was found to be acute limb ischemia (94% AAILI III A/B), which was atheosclerotic (59.9%) or diabetic (28.8%) in origin and occurred almost exclusively in men over 60 years of age (82.6%). The severity of the disease increased with the delay in admission, 67.3% of the patients being admitted only when the symptoms had been present for 15 or more days. The major findings were wet gangrene in 59.6% of the patients and 61.5% of the patients having above knee amputation. The multifactorial nature of the risks was further confirmed by post-COVID hypercoagulability (4 cases) and reamputations (7.7%). The right-limbs had arterial occlusions in 78.8% of the patients as seen on ultrasound duplex scanning. Standardized heparin (100%), fibrinolytics (57.6%) and surgery resulted in 84.6% of the patients having a primary healed stump, but 13.4% needed secondary care. Recommendations: (1) Increase the screening rate (high risk populations) and public awareness to decrease the time to presentation; (2) Enhance the multidisciplinary perioperative care (glycaemic and anticoagulation control); (3) Improve the surgical triage (revascularisation for potentially viable limbs); (4) Watch for post-COVID hypercoagulability; (5) Create resource adapted guidelines (for example, USDS training) and prosthetic access programs. If these strategies are to be implemented, it could lead to a reduction in amputations, improve rehabilitation and outcomes in the hospitals of various region of Kyrgyzstan.

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