

## **Digital Necrosis: The Tip of the Iceberg! About 69 Cases**

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### **INTRODUCTION**

Digital necrosis is a clinical manifestation of a general or locoregional pathology and represents the ultimate stage of distal ischemia (1). It is more likely to be the consequence of a macroangiopathy which can also sometimes be associated with a microangiopathy. The necrosis of fingers and toes may be caused by a great variety of diseases including collagen vascular diseases (systemic sclerosis...), arteriopathies, vasculitis, haemopathies, occupational diseases and many others (2).

Given the poor clinical prognosis, digital necrosis is a medical emergency requiring a rigorous diagnostic approach in order to avoid the evolution towards irreversible gangrene, limiting the therapeutic options to amputation and lifelong disability (3).

### **MATERIALS AND METHODS**

This is a cross-sectional study with an analytical aim that included patients hospitalized in the dermatology and venereology department of the Ibn Rochd University Hospital in Casablanca during the last 21 years between January 2000 and November 2021 in order to study the epidemiological, etiological and therapeutic profile of digital necrosis in our department.

### **RESULTS**

Sixty-nine cases were collected over the last 21 years. They were 35 men and 34 women with an average age of 51 years and extremes ranging from 25 to 87 years. Thirty-one patients were smokers (45%), 11 patients were cannabis users (15%). Raynaud's phenomenon was present in 39 cases (56%) and was bilateral in all our patients. In these situations, the average diagnostic delay was 7 months [10 days-5 years].

Each patient underwent a clinical examination combined with the exploration of vascular territories by radiological assessments: X-rays of the limbs or CT angiography. The [figure 1](#) shows clinical and radiological pictures of a patient who presented with a digital gangrene and whose angioscan of the abdominal aorta and the arteries of the lower limbs revealed the occlusion of the superficial femoral artery from its origin to its junction 2/3 proximal - 1/3 distal.

Obliterative arterial disease of the lower limbs was the most frequent etiology (32%), followed by systemic sclerosis (14%), systemic lupus erythematosus (14%), Leo Buerger's disease (14%) ([Figure 2](#)), mixed connective tissue disorders (7%), cryoglobulinemia (5%), Gougerot-Sjögren's disease (5%), anti-phospholipid syndrome (5%) and 3 cases of systemic vasculitis (4%), 1 of which was Takayasu disease ([Table 1](#)).

The main medical treatments used were etiological treatment (corticosteroids, immunosuppressants, etc.) associated with smoking cessation, vasodilator treatments and wound care.

19 patients (27%) required extremity amputations, 16 patients (23%) underwent necrosectomies and only 3 patients (4%) underwent revascularisation in the cardiovascular surgery department; about 40% of the patients were stabilised under well-conducted medical treatment ([Figure 3](#)).

### **DISCUSSION**

Digital necrosis is the final stage of distal ischemia that can be caused by different diseases including obliterative arteriopathy of the lower limbs mainly due to atherosclerosis which is a chronic inflammatory disease that is continuous crosstalk between the lipid metabolism and immune-inflammatory pathways.

It is a general disease and can therefore often have multiple arterial locations: iliac, femoral, popliteal, coronary and cerebral arteries (carotid bifurcation+++). Their involvement must be sought during the assessment of atheromatous disease by a careful general clinical examination and exploration of all vascular territories (4).

Leo Buerger's disease or thrombo-angiitis obliterans can also cause distal digital necrosis; It is a nonatherosclerotic, segmental, inflammatory vasculitis that is strongly associated with smoking and commonly affects the small- and medium-sized arteries of the upper and lower extremities, but rarely also the coronary, cerebral, pulmonary, renal and mesenteric arteries (5). It occurs mainly in young men in 90% of cases. Connective tissue disorders like sclerosis or systemic lupus erythematosus can lead in some rare cases to digital gangrene (1.3% of SLE patients); especially in patients with Raynaud's phenomenon considered as a predictive factor for

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developing digital necrosis (6). Another predictive factor is antiphospholipid syndrome (APS).

During Coronavirus pandemic, a procoagulant state contributes significantly to the morbidity and mortality. Some cases of severe COVID-19 infection were associated with intravascular fibrin deposition and ischemic complications related to medium and larger vessel thrombosis exemplified by lower limb ischemia and cutaneous necrosis attributable to thrombotic arterial occlusion (7, 8, 9, 10).

The suggested treatment of digital gangrene in the literature includes corticosteroids, immunosuppressants as well as lipid-lowering, antithrombotic, antihypertensive and glycemic control agents in addition to counseling on smoking cessation, diet, exercise, and preventive foot care. (11,12).

The prognosis is unfavorable and needs an early etiological diagnosis and appropriate management to avoid the extension of lesions that can become irreversible.

Our study has shown the diversity of etiologies of digital necrosis dominated by obliterative arterial disease of the lower limbs and Leo Buerger's disease in male smokers, which mainly affect the toes and require exploration of all the vascular territories. However, connective tissue disorders mainly affect women and can lead to necrosis of the fingers alone or associated with the toes. The prognosis is poor, requiring early and appropriate management.

### CONCLUSION

Digital necrosis is a common symptom, revealing a vascular pathology. Its causes are diverse. In women, it first suggests a connective tissue disease whereas in men, a diffuse arteriopathy such as obliterative arterial disease of the lower limbs or Leo Buerger's disease. The etiological investigations should not delay the treatment in order to avoid excessive amputations.



**Fig.1: Clinical and radiological aspect of digital necrosis in a patient with obliterative arteriopathy of the lower limbs.**



Fig.2: Clinical aspect of digital necrosis in a patient with Leo Buerger's disease

Table 1: Distribution of etiologies of digital necrosis between 2000 and 2021.

Etiologies	Percentage (%)
Obliterative arteriopathy of lower limbs	32
Leo Buerger's disease	14
Connective tissue disorders	50
Scleroderma	14
Systemic lupus erythematosus	14
Mixed connective tissue disorders	7
Sjogren syndrome	5
Cryoglobulinemia	5
APL syndrome	5
Vasculitis (Wegener)	4

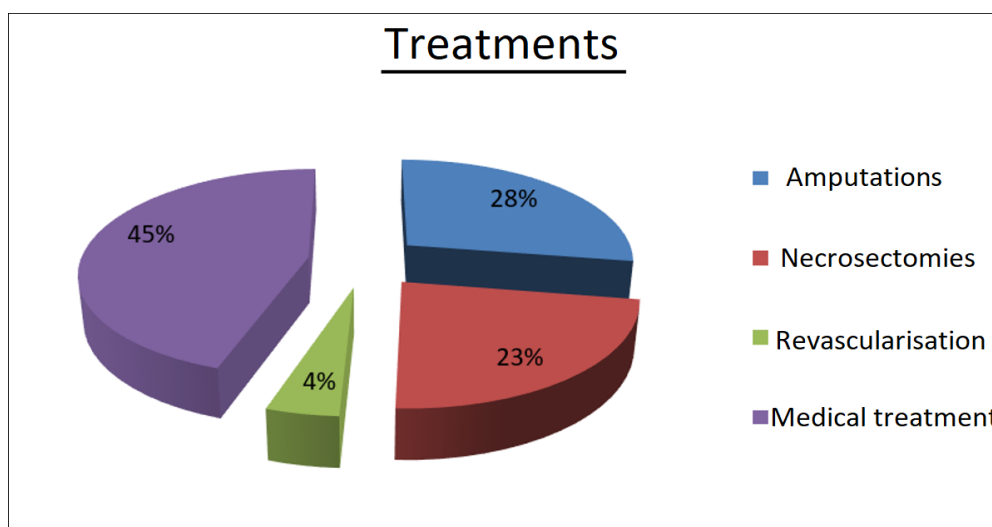


Fig.3: Different treatments used in patients with digital necrosis

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