Digital ischemia of the upper limb: Our systematic treatment protocol

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INTRODUCTION

Symptomatic upper extremity digital ischemia is an uncommon disorder reflecting diverse etiologies (1). The evaluation and treatment of our practical application for digital ischemia is demonstrated through illustrative cases. The relative rarity of vascular disorders of the arm accounts for unfamiliarity with upper extremity diagnostic testing on the part of even experienced vascular clinicians (2). Upper-extremity digital ischemia needs a high index of suspicion in cases with unknown or unproven primary focus of the emboli. Prompt recognition and early consultation seem necessary to prevent or reduce the extent of the amputation (3).

CASE PRESENTATION

One of our cases was a 72-year-old male who had undergone coronary bypass surgery 7 years ago at our institution. He was admitted to our clinic with complaints of discoloration and pain in the 2nd finger of his left hand, started 5 days ago (Figure 1).

Figure 1

His physical examination revealed that all the peripheral pulses were palpable. Clinical examination shows a negative Allen test. His serological tests identified no pathological finding. Duplex scanning revealed no proximal source of emboli and arterial obstruction sign. Transthoracic echocardiography showed no cardiac foci for peripheral emboli.

Avoidance of cold and other conservative treatment modalities were initiated.

Our medical treatment strategy was as follows:
None of our cases developed ulceration on the tips of the extremities in late term. Neither of them required late-term amputation. All of our patients showed improvement in discoloration as in our 69-year-old female patient and complete relief of pain was obtained (Figure 2).

DISCUSSION

Upper extremity arterial disease is much less common than lower extremity involvement(4). For upper extremity ischemia; using a careful history and physical examination, detailed vascular laboratory testing, serological tests, and occasionally arteriography, it is possible to determine the cause in most patients(5).

In addition to clinical examination, diagnostic studies include noninvasive vascular studies, serologic, immunologic, and hematologic studies (when indicated), and if needed selective arteriography(4).

Patients with either serological abnormalities or arterial obstruction at presentation are most likely to have continued difficulties. A significant number of these patients, approximately 50%, are most symptomatic at the time of initial presentation and improve under follow-up(5).

Atherosclerotic disease is the most common cause of large vessel obstruction, but it can also cause small vessel obstruction by atheromatous embolization or thromboembolism(4).

In the study of Jones; the pathophysiologic mechanism responsible for the ischemia was determined to be emboli in 6%, vasospasm in 10%, thrombosis or “sludging” in 28%, occlusive disease in 26%, and occlusive disease associated with either vasospasm or external compression in 30%(6).

The diagnosis and localization of arterial occlusive disease is dependent on the use of Doppler-derived arterial pressures, which may be measured serially from the upper arm to the digits. Similarly, provocative testing with cold stimulation can assist in the diagnosis of Raynaud’s and other vasospastic disorders. Upper extremity noninvasive tests will provide the clinician with confidence in the objective assessment of upper extremity vascular disease(2).

Most patients presenting with upper extremity ischemia have small vessel disease that is not amenable to surgical treatment. The primary treatment of upper extremity ischemia remains cold avoidance, with pharmacological treatment added in a limited number of patients(5).

References

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