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Study the pattern of clinical presentation of peripheral arterial occlusive disease

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Abstract

Background and Aim: Diagnosing PAD is important in order to implement appropriate therapies for preventing cardiovascular morbidity and mortality, improving functional impairment, and preventing further functional decline. Hence the aim was to study the pattern of clinical presentation of Peripheral arterial occlusive disease.

Materials & Methods: A total of random selection of 100 cases was done. a good clinical history in a chronological order was taken as soon as the patient was admitted. A thorough clinical examination was carried out personally to find out and establish clinically first, the presence of vascular obstruction.

Results: Majority of the patients in my study underwent amputation of affected limb. The level of amputation was below knee in 42% and above knee in 58% cases. Lumbar sympathectomy was done in 16 cases, and among these cases disarticulation was done in 12 cases. 12% of the patients underwent disarticulation of the involved toes.

Conclusion: The level of amputation was below knee in 42% and above knee in 58% cases. Even after the surgical treatment in the TAO patients, cessation of smoking was an important factor in giving relief from the pain. The patients who continued to smoke had aggravation of symptoms.

Keywords: Amputation, clinical presentation, diagnosis, peripheral arterial diseases

Introduction

Peripheral arterial occlusive disease or commonly known as Peripheral arterial disease (PAD) comprises those entities which result in obstruction to blood flow in the arteries, exclusive of the coronary and intracranial vessels and the term is usually applied to disease involving the arteries of lower extremity^[1, 2].

The symptoms of lower extremity arterial occlusive disease are classified into two large categories: Acute Limb Ischemia (ALI) and chronic limb ischemia. 90% of acute ischemias are either thrombotic or embolic. Chronic ischemia is largely due to atherosclerotic changes that manifest from asymptomatic to limb-threatening gangrene^[3, 4].

Peripheral arterial disease is an important manifestation of atherosclerosis involving the arteries of legs^[5, 6]. Vascular surgeons continue to encounter complications of atherosclerosis as their most common clinical challenge^[7, 8].

Management of atherosclerosis plays an important role in adult medical care. Although only 1-2% of people younger than 50 yrs of age suffer from symptoms of intermittent claudication, this figure rises to 5% in those aged 50 to 70 yrs and to 10% in those older than 70 yrs.

Various non-atherosclerotic conditions like Thromboangiitis obliterans, Takayasu's disease, arterial fibrodysplasia, peripheral emboli, primary vascular tumors, remote trauma or radiation injury also can cause symptoms consistent with intermittent claudication. Thrombo-angiitis obliterans is an inflammatory occlusive disease primarily involving the medium sized muscular and smaller arteries in extremities, with smoking as the strong associated causative factor. In the lower limb, the disease commences in the digital arteries and small arteries of the foot and then proceeds to involve the crural arteries^[9].

The clinical course of TAO is tremendously influenced by whether the patient stops smoking or not. If he continues to smoke there is progressive arterial insufficiency.

The risks to involved limbs are greater in TAO than in peripheral arteriosclerosis occlusive arterial disease. However patients with TAO have a normal life span, whereas those with atherosclerosis have a greatly decreased survival compared with a normal population of the same age.

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Currently the appropriate management of patients with chronic lower limb ischemia is a complex clinical issue. Despite the advance in technical issues of revascularization, there remains much that can be done regarding education, risk factor modification and non-operative therapy for these patients. Major amputation is eventually required in more than a third of patients once limb threatening symptoms and signs occur^[10, 11].

Never the less, the cause of death in patients with Peripheral arterial disease is seldom direct result of lower limb ischemia, most patients die from complications of coronary artery or cerebro-vascular disease.

Popliteal artery entrapment syndrome and cystic adventitial disease of popliteal artery are rare causes of chronic arterial ischemia of generally young healthy individuals. Although these diseases can produce severe disability if left untreated, normal circulation can be restored surgically^[12].

PAD is debilitating, persons with PAD have substantial functional impairment and increased rates of functional decline compared with their counterparts without PAD. Diagnosing PAD is important in order to implement appropriate therapies for preventing cardiovascular morbidity and mortality, improving functional impairment, and preventing further functional decline. Hence the aim was to study the pattern of clinical presentation of Peripheral arterial occlusive disease.

Materials & Methods

This study was conducted by random selection of 100 cases with Peripheral Arterial disease of the lower extremities admitted to surgical wards Hospital.

The method of the study consisted of taking a good clinical history in a chronological order as soon as the patient was admitted. A thorough clinical examination was carried out personally to find out and establish clinically first, the presence of vascular obstruction. Detailed vascular system examination was done as per the proforma provided. The degree of vascular inadequacy and extent of the spread of the disease was assessed clinically by noting the colour change, extent and spread of gangrene and absence of peripheral pulses in the affected limbs. This together with history of the patient regarding the distribution and type of pain, gave in a fairly good number of cases studied, an idea of the state of patient's vascular condition. Later after clinical scrutiny, essential laboratory investigations were done as per the proforma provided to look for the presence of atherosclerotic risk factors. Patients were further evaluated objectively by Doppler scanning whenever feasible to assess the level and degree of obstruction objectively.

The treatment of each patient was individualized with the aim to achieve foot salvage wherever feasible. A record of patient's progress and response to various modalities of treatment was made.

Patients who returned for follow up were followed up for minimum of six months and during each follow up detailed history was taken and progress of the disease was assessed.

In all cases, a structural Proforma was used to collect the information of an individual patient.

Cases were collected as and when they presented with the following inclusion and exclusion criteria.

Inclusion criteria: Patients presenting with signs and symptoms of Peripheral Arterial disease of the lower extremities like intermittent claudication, rest pain, ulceration and gangrene, Patients with evidence of lower limb arterial occlusive disease on Doppler study.

Exclusion criteria: Patients with Peripheral Arterial disease of regions other than the lower extremities, Patients with history of trauma to the lower extremities were excluded, Patients presenting with pain of skeletal or neurologic origin of lower limbs with no evidence of vascular damage, Patients presenting with ulcers of traumatic or infective origin with no evidence of ischemia, These cases were analyzed in detail with reference to age, sex incidence, an duration of clinical presentation, clinical manifestations and various investigations they underwent during the period of hospital stay.

Results

Total numbers of patients in the present study were hundred. (n=100) Table 1 shows the etiology of Peripheral Arterial disease of the lower extremities in our study. All the cases in the present study fall under the category of chronic lower limb ischemia and no cases of acute limb ischemia of non traumatic origin were encountered during the study period.

TAO and Atherosclerosis are the etiologies for PAD in these cases, with atherosclerosis being more common of the two. All TAO cases were males and in the atherosclerosis group there were three females. The diagnosis was done based on history, examination and relevant investigations. Majority of the cases in atherosclerosis were above the age of 50 yrs, while in the TAO group majority belong to the age group between 31 to 50 yrs.

Majority of the patients presented with gangrenous changes. The incidence of gangrene is almost equal in both the groups. All patients had dry gangrene. Ischemic ulceration was present in twenty patients. TAO was usually limited to the distal part of the limb, whereas atherosclerosis was seen extending proximally. Six cases due to atherosclerosis had gangrene extending upto the leg. No cases had gangrene extending to the thigh.

Majority of the patients in my study underwent amputation of affected limb. The level of amputation was below knee in 42% and above knee in 58% cases. Lumbar sympathectomy was done in 16 cases, and among these cases disarticulation was done in 12 cases. 12% of the patients underwent disarticulation of the involved toes.

Table 1: Sex distribution of patients with PAD

Sex	Atherosclerosis	TAO
Female	66	28
Male	6	0
Total	72	28

Table 2: Age distribution of patients

Age group	Arthrosclerosis	TAO
21 – 30	0	4
31 – 40	0	16
41 – 50	8	8
51 – 60	28	0
>61	36	0
Total	72	28

Table 3: Extent of gangrenous changes in lower limbs

Site	Atherosclerosis	TAO
Toes only	24	24
Toes and foot	42	4
Toes, foot and leg	6	0
Upto thigh	0	0
Total	72	28

Table 4: Associated diseases in patient with PAD

Associated diseases	Atherosclerosis	TAO
Diabetes Mellitus (DM)	38	0
Hypertension	18	0
Ischemic Heart Disease	12	0
Hypercholes	4	0

Discussion

In the present series of 100 cases of Peripheral Arterial disease (PAD) of the lower extremities, all the cases in the present study fall under the category of chronic lower limb ischemia and no cases of acute limb ischemia of non traumatic origin were encountered during the study period. The diagnosis was done based on detailed history, thorough physical examination and appropriate investigations.

Out of the total 100 cases, 72 cases were due to Atherosclerosis and 28 were due to Thrombo Angitis Obliterans. Atherosclerosis was a more common presentation in this study. None of the cases in this study were due to any rare causes of lower limb ischemia like popliteal entrapment syndrome or cystic medial necrosis of the popliteal artery.

Selvin E and Erlinger TP reported from National Health and Nutrition Examination Survey (NHANES) conducted from 1999 to 2000 in the United States, that the overall prevalence of PAD (defined as an ABI < 0.90) was 4.3% (95% confidence interval [CI], 3.1% to 5.5%). The prevalence of Peripheral arterial disease in the general population is essentially unknown, primarily because of the lack of data on asymptomatic PAD [13, 14].

In the present study, all the cases of PAD presented with intermittent claudication and rest pain as common symptoms, while gangrene (80% of cases) and ischemic ulcer (20% of cases) were the other predominant symptoms.

Eighty-one per cent of the cases in the atherosclerosis group and 79% of the cases in the TAO group presented with gangrenous changes in the affected lower limb. Ischemic ulcer over the foot was present in 19% of the cases in the atherosclerosis group and 21% of the cases in the TAO group.

A study on the clinical profile of TAO and Arteriosclerosis obliterans done by Nigam R reported that claudication was the commonest presentation in TAO and ulcer or gangrene with claudication was common mode of presentation in Atherosclerosis. The commonest site of involvement in the form of critical limb ischemia was foot in both groups.

In my study, 86% of the cases in TAO group and only 33% cases in the Atherosclerosis group had gangrene limited to the toes only. In the atherosclerosis group, 8% cases presented with gangrene extending to the leg, and these patients were above the age of 60 years.

Bilateral lower limb ischemia was seen in 12% patients, and all belonged to the TAO group. None of the patients with atherosclerosis had bilateral disease. Total of 16 patients (16%) were subjected to LS. In all these patients the approach to the lumbar sympathetic chain was retroperitoneal lumbar approach with patient tilted to 15° on the unaffected side. Lumbar L-2, L-3 and L-4 were removed routinely. The efficacy of operative treatment of LS was assessed purely on the subjective improvement of the patient.

Following criteria were taken as good result: Relief of RP, Rise in cutaneous temperature of denervated limbs as judged by palpation, Rapid healing of trophic ulcers, Improvement in claudication distance, Resumption to their occupation

Patients who complained of IC showed subjective evidence of improvement in 6 out of 16 cases (37.5%). Statistical data of the

results of LS on IC alone do not show much improvement. Gillespie (1960) had studied 100 cases and gave his analysis as follows. Overall improvement was seen in 86% of cases. In cases of claudication only improvement was seen in only in 13% of cases. Oldham JB (JRCS, 1964) concluded that sympathectomy had little or no influence on the blood supply of muscle during activity and therefore not indicated in patients in whom only symptom was uncomplicated IC [15].

In my study, 10 patients out of 16 patients with RP at presentation showed improvement. In our study 2 patient out of 4 patients with ulceration showed improvement in healing. The best results of lumbar sympathectomy were reported by Persson and Co-workers who performed sympathectomy on 22 limbs with adequate inflow but importantly with no evidence of neuropathy. Following are the results. 87% demonstrated complete ulcer healing whereas only 12% required amputation. Lee and colleagues reported somewhat lower healing rates for patients with superficial toe gangrene with 56% of the involved digits salvaged by sympathectomy and a 40% toe salvages rate among those with 3 or more digits involved.

Conclusion

TAO and Atherosclerosis are the etiologies for ischemia in these cases, with atherosclerosis being more common of the two. TAO presented at a younger age group whereas atherosclerosis presented in the older age group. All the cases were managed with some form of surgery and majority of them had limb loss. Majority of the patients in this study presented at a late stage in the disease process, with gangrenous changes, thus leaving minimal options for salvaging the affected limb. The level of amputation was below knee in 42% and above knee in 58% cases. Even after the surgical treatment in the TAO patients, cessation of smoking was an important factor in giving relief from the pain. The patients who continued to smoke had aggravation of symptoms.

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