Original article :

Diagnosis and management of pheripheral arterial occlusive disease

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Abstract:

Introduction: Peripheral arterial occlusive disease (PAOD)involves variety of disorders of arterial and venous system peripheral arterial occlusive disease due to atherosclerotic occlusion causes ischemia of extremities and is a major cause of disability, loss of work, and lifestyle changes in the world.

Material and methods: The study was conducted in 35 patients of Pheripheral arterial insufficiency admitted in Tertiary Health Center over the period of two years.

Most common risk factor was smoking which was seen in 23 patients (66 %) , followed by hypertension in 11 patients (31 %) and Diabetes mellitus , hyperlipidemia seen in 10 patients (28 %).

Conclusion: Peripheral Arterial occlusive disease is predominantly disease of old age and male sex with maximum patients in 5th decade of life.

INTRODUCTION

Peripheral arterial occlusive disease (PAOD)involves variety of disorders of arterial and venous system peripheral arterial occlusive disease due to atherosclerotic occlusion causes ischemia of extremities and is a major cause of disability, loss of work, and lifestyle changes in the world.[1] It is defined as obstruction of blood flow into an arterial tree excluding the intracranial or coronary circulation.[1,2,9]

Disease has large spectrum of presentation from asymptomatic to acute severe gangrene with large variations. Estimates of the prevalence of intermittent claudication vary by population from 0.6 % to 10%; the rate increases dramatically with age.[8,14] Approximately, 20% to 25% of patients require revascularisation, while fewer than 5% will progress to critical limb ischemia. Limb loss, although rare is associated with severe disability, and overall poor prognosis, with 30% to 40% mortality in the first 24 months after limb loss. As with coronary artery disease, the most common cause of symptomatic obstruction in the peripheral arterial tree is atherosclerosis, a systemic inflammatory process in which cholesterol – laden plaque builds up in the artery and eventually blocks lumen. [3,13]

Epidemiological studies have shown that certain diseases, lifestyles and habits increase the risk of developing atherosclerosis. Smoking, hypertension, hyperlipidemia, and high fat diet appear to be high risk factors to the development of atherosclerosis.

Managing patients with Peripheral arterial occlusive disease requires an accurate assessment of the severity of the condition and the risk factors likely to predict disease progression. The spectrum of patient presentation ranges from asymptomatic to critical limb ischemia.[14]

Vascular surgery is becoming a distinct specialty, with advances surgical technics instrument and recent technologies like endoluminal and endovascular surgeries. [17,18] With the development of the imaging modalities the diagnosis of Peripheral arterial occlusive disease has become more accurate .There is development of vascular surgery in last few decades with newer vascular grafts, better suture materials and instruments. Endovascular therapy is an alternative option for vascular bypass surgery and it is rapidly advancing with development of new stents and new techniques. There are many drug trials going for the treatment and prevention of atherosclerosis and in future medical management will become main modality of management of Peripheral arterial occlusive disease[11,18]

In spite of massive increase and impact of vascular diseases, the early recognition of these is still delayed by medical community and then very few are referred to vascular surgeons. One reason of course is lack of facilities of vascular surgery and dedicated specialist in vascular surgery across the India; however another often quoted reason is the expense involved. But most fail to realize the mid and long term cost of the amputation is usually higher than the bypass procedures or angioplasty. There is significant delay on patient's part to seek medical help for early symptoms of ischemia, and behavioral modification in all over world. So patient's health education alone may change outcome of management of Peripheral arterial occlusive disease.

AIMS AND OBJECTIVES

1. To study the clinical presentation of Peripheral arterial occlusive disease.
2. To study the role of imaging modalities in management of Peripheral arterial occlusive disease
3. To compare efficacy of various medical and surgical modes of management.

MATERIAL AND METHODS

The study was conducted in 35 patients of Pheripheral arterial insufficiency admitted in Tertiary Health Center over the period of two years.

Incluson criteria:-

1. Patients with both upper and lower limb peripheral vascular disease included in the study.
2. Patients of all age group and both sexes are included in the study.
3. Patients with both acute and chronic symptoms are selected for study
4. Patients with predominant arterial disease included in study and patients of

Exclusion criteria

1.Pure venous disease are excluded from study.

Methodology

Detailed clinical history is recorded with respect to age, sex, occupation, symptoms, severity and duration of symptoms, associated medical illnesses (if any), previous surgical intervention and habits noted.

Thorough clinical examination carried out to find out level of arterial occlusion.

Patients investigated with

i) Routine investigation Blood investigation, Chest X-ray, E C G, lipid profile

ii) Special investigation (Imaging studies)

Peripheral arterial color Doppler

Angiography (conventional/ DSA/ C.T.

Angiography/ M.R. Angiography)

Based on above mentioned criteria and method study tries to find clinical of disease, presentation,various diagnostic tools available and proper utilization of these tools to proper diagnosis and to guide to management of Pheripheral arterial insufficiency. All patients are subjected to various medical and surgical treatment as per the clinical scenario and comparative analysis is done at the end of the study

OBSERVATIONS

Table 1- Age distribution.

Age (yrs)	Atherosclerosis & Thrombosis	Buerger's Disease	Embolism	Other	Total
<30	0	0	0	1	1
31-40	2	1	0	2	5
41-50	6	5	0	1	12
51-60	10	0	1	2	13
61-70	4	0	0	0	4
Total	22	6	1	6	35

1.the maximum numbers of patients of peripheral vascular disease were seen in age group of 51-60 yr (37%) patients followed by 41-50 yrs(34%) patients. The youngest patient was 28 years old, whereas the oldest was 63 years old. Most common disease in old age is atheroscelosis middle age is burgers disease and in young age is specific disease like cervical rib

Table 2 – Extremities involved.

	Atherosclerosis	Buerger's Disease	Thrombeembolism	Other	Total
Upper limb	0	0	3	2	5
Lower limb	21	6	0	3	30
Total	22	6	1	6	35

5patients(14%) had peripheral vascular disease of upper limb, while 30 (82%) had peripheral vascular disease of lower limb.

In lower limb, atherosclerosis was the most common etiological factor. In upper limb other causes like cervical rib, Raynaud's phenomenon were common seen in 3 cases. Buerger's disease (Thromboangitis Obliterans) was seen only in lower limb.

Table – 3 Sex distributions.

	Atherosclerosis & Thrombosis	Buerger's Disease	Embolism	Other	Total
Males	18	6	---	4	28
Females	4	---	1	2	7
Total	22	6	1	6	35

Table- 4 Risk factors

Predisposing factors	Atherosclerosis	Buerger's disease	Embolism	Other	Total
Smoking	14	6	0	3	23
Hypertension	10	1	0	0	11
Diabetes	9	0	1	0	10
Hyperlipidemia	9	1	0	0	10

Most common risk factor was smoking which was seen in 23 patients (66 %) , followed by hypertension in 11 patients (31 %) and Diabetes mellitus , hyperlipidemia seen in 10 patients (28 %).

Table- 5 Predominant Symptoms.

Symptoms	Atherosclerosis	Buerger's disease	Embolism	Other	Total
Intermittent claudication	16	5	0	2	23
Rest pain	16	3	0	2	21
Discoloration	6	---	---	2	8
Ulcer	5	3	---	---	8

Most common symptom was of intermittent claudication followed by rest pain, discoloration and ulceration.

Table – 6 Absent peripheral pulses.

Peripheral pulses Not palpable	Atherosclerosis	Buerger's	Embolism	Other	Total
Only DP	0	1	0	0	1
Only PT	0	1	0	0	1
DP + PT	10	4	0	0	14
DP+PT+PA	8	0	0	1	9
DP+PT+PA+FA	3	0	0	1	4
RA+UA+BA				2	2
RA+UA+BA+AA	1				1

Absent peripheral pulsation was the commonest sign detected in 32 patients (91%).14 of these patients (40 %) had absent Dorsalis pedis and Post tibial pulsation suggestive of block at popliteal trifurcation . 8 patients (22 %) had absent popliteal, Dorsalis pedis and post tibial pulsations suggestive of femoral segment block. Isolated post tibial and Dorsalis pedis block seen in 2 cases of Buerger's disease.

Table- 7 Other signs in peripheral vascular disease.

	Atherosclerosis	Buerger's	Embolism	Other	Total
Trophic Changes	18	6	1	3	28
Coldness	17	4	1	5	27
Gangrene	13	4	1	3	21
pallor	6	2	0	3	11
Ulceration	9	1	0	1	11

Regarding other signs, trophic changes were seen in 28 (80%) patients, followed by coldness of limb seen in 27(77%) patients. Gangrene is seen in 10 (28.5%) patients, while pallor and ulceration seen in 11(31%) of patients.

Table-9 **Treatment given:**

Conservative treatment was given in all the patients, except 3 patients with acute ischemia treated with embolectomy out of whom one patient had to undergo amputation. only 4 patients were satisfied with medical line of management while 28 patients required one or combination of intervention 8.5% patients were treated with conservative treatment alone, symptomatically improved on conservative treatment alone.

		Symptomatically relieved	Failed to get relief	effectiveness
Percutaneous transluminal angioplasty	6	2	4	30%
bypass grafting	4	2	2	50%
lumbar sympathectomy	3	1	2	33%
omentopexy	2	0	2	0%
cervical rib excision	2	2	0	100%
cervical sympathectomy	2	0	2	0%
amputation.	10	4	6	40%
embolectomy	3	0	3	0%

Percutaneous transluminal angioplasty done only in 6 patients. However, 4 patients required bypass grafting out of which 2 patients had to undergo amputation. 3 patients treated with lumbar sympathectomy , 2 patients treated with omentopexy and 3 patients with embolectomy had poor outcome. For upper limb ischemia, 2 patients had to undergo surgery for cervical rib with cervical rib excision with 100% Relief While 2 patients treated with cervical sympathectomy with poor results. In the present study 10 (28%) patients had to undergo amputation.

CONCLUSION

Peripheral Arterial occlusive disease is predominantly disease of old age and male sex with maximum patients in 5th decade of life. Smoking was the most common and preventable risk factor for Peripheral Arterial occlusive disease. Therefore cessation of smoking is an important step to prevent peripheral vascular disease. To conclude "**stop smoking and keep walking**" is cornerstone of medical treatment.[11]

Most common presentation is chronic limb ischemia while acute limb ischemia is a rare presentation .intermittent claudication and absence of pulse are most common signs and symptoms however have to be supported with suitable investigation so as tobe useful guide for management.

Colour Doppler is most cost effective easily accessible investigation in a patient of peripheral vascular disease and Arteriography by computerized tomography is useful in a subset of patients which require surgical intervention in terms of bypass,angioplasty& stenting. Approch to treating peripheral vascular disease is still considered on conservative reason being widespread systemic disease ,poor affordability of the patient to gain access to spcialist doing bypass and other skilled surgeries. However with availabiltity of accurate diagnostic modalities like CT Angiography and colour Doppler with better USG machine and software a subset of patients can be considered for primary surigical management.availalbility of microvascular anastomosis machinery and adequate expertise still remain major limitations . Amputations were required in a significant number of patients. Hence steps should be taken towards early diagnosis and more effective management of Peripheral Arterial occlusive disease.

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