An analytical study of peripheral arterial disease at Government General Hospital, Nizamabad

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ABSTRACT

Background: Peripheral arterial disease (PAD) is linked to a decrease in functional ability as well as a higher risk of cardiovascular morbidity and mortality. Despite its widespread incidence, links to mortality, morbidity, and impaired quality of life, PAD is underdiagnosed and undertreated. **Aims and Objectives:** The aim of the study was to review the available literature on this subject and analyze the mode of presentation, symptoms, signs, age incidence and results of conservative management and angioplasty, and stenting as measured by limb salvage and amputation rates. **Materials and Methods:** The study was carried out on 40 patients chosen from the patients admitted in Government General Hospital, Nizamabad, with a diagnosis of peripheral vascular disease from May 2019 to April 2022. **Results:** It is revealed from the study that out of 28 patients with Atherosclerosis, 10 patients were managed conservatively, 12 underwent primary amputation, two secondary amputation, and four patients were managed with angioplasty and stenting of anterior tibial artery. Among the eight patients with Thromboangiitis Obliterans, six patients were managed conservatively, and two patients underwent primary amputations. Two patients with acute embolic disease were referred to higher center for embolectomy and remaining two patients with inconclusive etiology were managed conservatively. **Conclusion:** Atherosclerosis is mainly a disease of old age but now the trend is moving towards earlier decades as well. Hence, risk factor modification and awareness remain the best method of prevention. Embolectomy should be carried out aggressively in all cases with potentially salvageable limbs.

Key words: Amputation; Peripheral arterial disease; Thromboangitis obliterans

INTRODUCTION

Peripheral arterial disease (PAD) is linked to a decrease in functional ability as well as a higher risk of cardiovascular morbidity and mortality. Despite its widespread incidence, links to mortality, morbidity, and impaired quality of life, PAD is underdiagnosed and undertreated.[1-3]

For two crucial reasons, a PAD diagnosis should not be neglected. First, individuals with PAD may endure claudication, ischemic rest discomfort, ischemic ulcerations, frequent hospitalizations, revascularizations, and limb loss among other issues.[4] These lead to a poor quality of life and a high rate of depression.[5,6] Even patients with no leg symptoms have lower functional performance, a lower quality of life, a smaller calf muscle area, and more calf muscle fat than patients without PAD of the same age.[7] Second, as compared to people without PAD, patients with PAD are more likely to suffer a myocardial infarction, stroke, or cardiovascular death, as well as a higher probability of all-cause mortality.[8-10]

Atherosclerotic cardiovascular problems are the greatest cause of morbidity and mortality in people with diabetes, and they account for the majority of the disease's direct and indirect costs. As a result, all diabetic patients should have their cardiovascular risk factors, such as hypertension, dyslipidemia, and smoking, a family history of early

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coronary artery disease (CAD), chronic renal disease, and albuminuria, examined at least once a year.[1]

Aims and objectives

The aim of the study was too review the available literature on this subject and analyze the mode of presentation, symptoms, signs, age incidence and results of conservative management and angioplasty, and stenting as measured by limb salvage and amputation rates.

MATERIALS AND METHODS

"A study of peripheral vascular disease in Government General Hospital, Nizamabad" was done in Government General Hospital attached to Government Medical College, Nizamabad. The 40 patients for the study were chosen from patients admitted in this hospital with a diagnosis of peripheral vascular disease from May 2019 to April 2022.

Study type: This was a prospective and observational study

The method of study adopted for the 40 cases studied is as follows:

Patients admitted to the wards of Government General Hospital, Nizamabad with history of intermittent claudication, rest pain, ischemic ulcer, and gangrene were interviewed, and a detailed history taken. The particulars of each symptom were analyzed regarding the mode of onset, duration, progression, aggravating, and relieving factors. History of smoking was analyzed with respect to the age of onset of smoking, number of beedies/cigarettes smoked per day, number of years smoked and history of usage of smokeless tobacco. Any similar complaints in the past and any operative intervention/conservative measures were inquired into. Diabetes mellitus was ruled out.

A detailed physical examination was then undertaken, and various signs elicited. This included general physical examination to assess anemia, icterus, nutritional status, and presence of any systemic disease.

Local examination of the affected limb/limbs was carried out to assess trophic changes in the skin, hair, nails; any discoloration and muscle wasting was noted. Ulcers and gangrene were examined in detail and lastly examination of the peripheral pulses was done. Based on history and physical examination, a diagnosis of atherosclerosis was made if patients satisfied the following criteria:
1. Age<45 years.
2. Male sex
3. History of smoking
4. Ischemic ulceration, gangrene, rest pain, intermittent claudication, pain with involvement of small to medium sized arteries in the lower limbs with/without similar involvement in the upper limb.
5. Absence of atherosclerotic stigmata, diabetes mellitus or sources of embolism at the time of diagnosis.

Patients thus selected were investigated. Routine blood investigation including complete blood picture, blood urea, serum creatinine, and blood grouping and typing was done. Fasting and postprandial blood sugar estimation was done to rule out diabetes mellitus. ECG was carried out to rule out coronary involvement. Serum cholesterol estimation could not be done due to financial constraints. Color Doppler examination was done on the affected limb to assess the patency of the vessels, the level of block, and the presence of collateral circulation. CT angiogram was done in selected patients as this facility was not available in the hospital and had to be done outside.

Patients were initially managed by conservative measures on admission which included aspirin 75 mg OD and atorvastatin 10 mg OD. Ulcers were dressed daily and antibiotics were given. Patients with absent peripheral pulses who could afford were advised to go for angioplasty and stenting and two patients were referred to thromboblectomy at higher centers. Then, all patients were advised strict abstinence from smoking for the rest of their lives. In cases of failed surgery, amputation of the limbs was done.

Patients with diffuse disease not amenable to surgical procedure were managed conservatively with pain killers, aspirin, cilastazole, penaxiphyllin, and atorvastatin. They were followed up regularly to measure improvement or progression of symptoms.

Patients presenting very late with fully established extensive gangrene were managed straightaway with primary amputation.

All patients were discharged on aspirin, cilastazole, and atorvastatin and followed up at 1 month, 3 months and 6 months. Patients with ulcers were asked to come more frequently for dressing. Follow-up study was done to know the results of surgery, complications and disability, if any and for recurrence of symptoms and smoking.

RESULTS

Twenty-eight patients were found to have atherosclerosis which constituted 67.5% of all patients and eight patients were found to have Thromboangiitis Obliterans (TAO) who constituted 20% of patients. One patient each had acute embolic occlusion following thrombolysis for cardiac value thrombus and intra-arterial drug injection. In two patients, the etiology was inconclusive due to

lack of availability of further investigations and lack of affordability by the patients (Table 1).

Atherosclerosis was found to occur predominantly in patients above 50 years of age with 77.7% of cases above 50 years. 33.3% of patients were between 51 and 55 years and 29.6% of cases (eight patients) between 56 and 60 years of age. TAO was found predominantly in patients in 4th decade with six patients making up 75% of cases between 30 and 40 years of age (Table 2).

About 60.7% of patients with atherosclerosis were found to be smokers whereas all patients with TAO were smokers (Table 3).

The table shows the maximum number of beedies/cigarettes smoked by patients with atherosclerosis and TAO (Table 4).

Maximum number of patients with atherosclerosis were found to be smoking for 15–20 and 5–10 years for patients with TAO (Table 5).

Among the 28 patients with atherosclerosis, 10 patients were managed conservatively, four underwent arterial stenting. Primary amputation and secondary amputation were done to 12 and two patients, respectively. Among eight patients with TAO, six patients were managed conservatively, and primary amputation was done to remaining two patients. Two patients with acute limb ischemia were referred to higher centers for embolectomy (Table 6).

DISCUSSION

PAD, an atherosclerotic blockage of the arteries in the lower limbs, includes a variety of structural disorders including stenosis and aneurysms and functional issues with all non-coronary arteries.[11] After coronary heart disease and stroke, PAD is the third most common cause of atherosclerotic vascular morbidity. It has a similar to, if not higher, morbidity, death, and health-care expenses than the other two disorders.[12-14] Unfortunately, PAD continues to receive very less scientific attention compared to the plethora of studies on coronary heart disease and stroke, despite its size, the potential for morbidity, and the potential for mortality.[15,16] PAD is a widespread condition that is more prevalent in elderly people and people who have cardiovascular risk factors.[17-19]

Forty patients presenting with PAD were studied and the following observations were made.

One patient developed acute limb ischemia with thrombus in the right radial and ulnar artery following intra-arterial

Table 1: Incidence of various etiologies

Etiology	No. of cases	%
Atherosclerosis	28	67.5
Thromboangiitis Obliterans	8	20
Acute embolic occlusion following Thrombolysis for cardiac value thrombus	1	2.5
Acute embolic occlusion following intra-arterial drug injection	1	2.5
Etiology inconclusive	2	5
Total	40	100

Table 2: Age-wise distribution

	Atherosclerosis (n)	%	TAO (n)	%	Others (n)	%
31–35	0	0	1	12.5	0	0
36–40	0	0	5	62.5	4	80
41–45	3	7.40	2	25	0	0
46–50	4	14.8	0	0	0	0
51–55	9	33.3	0	0	1	20
56–60	8	29.6	0	0	0	0
>60	4	14.8	0	0	0	0
Total	28	100	8	100	5	100

TAO: Thromboangiitis Obliterans

Table 3: Smoking history among study population

	Atherosclerosis (n)	%	TAO (n)	%	Others (n)	%
Smokers	17	60.7	8	100	0	0
Non Smokers	11	39.3	0	0	4	100
Total	28	100	8	100	4	100

injection of some drug given in a private hospital for pyrexia. Nature of the drug and why it was given could not be known as there was no documentation and the patient was referred to higher center for embolectomy. The acute embolic occlusion cases are further referred to higher centers for embolectomy as the facilities are not available at Nizamabad General Hospital.

One patient had a prosthetic mitral valve for rheumatic heart disease and had mitral valve thrombosis for which thrombolysis was done by the cardiologist. Following this, the patient developed acute embolic occlusion of the right common femoral and superficial femoral arteries.

Patients who smoked more than 15 cigarettes/day were found to have more severe disease than those who smoked less. The most important modifiable risk factor for the development of PAD is smoking. It is unknown why the association between PAD and smoking is about twice as strong as that between PAD and CAD. Smokers have a four-fold increased risk of PAD compared to nonsmokers, and symptoms appear nearly a decade earlier. A dose-response association exists between pack-year history and PAD risk.[20-22]

Table 4: Maximum number of beedies/cigarettes smoked

Max no. of beedies/cigarettes	Atherosclerosis (n)	%	TAO (n)	%	Others (n)	%
5–10	3	30	1	12.5	0	0
10–15	3	30	1	12.5	0	0
15–20	4	40	6	75	0	0
>20	0	0	0	0	0	0
Total	10	100	8	100	0	0

Table 5: Maximum number of years smoked

Years Smoked	Atherosclerosis (n)	%	TAO (n)	%	Others (n)	%
<5	0	0	0	0	0	0
5–10	1	10	4	50	0	0
10–15	1	10	3	37.5	0	0
15–20	6	60	1	12.5	0	0
>20	2	20	0	0	0	0
Total	10	100	8	100	0	0

Table 6: Treatment performed study population

Treatment	Atherosclerosis	%	TAO	%	Others	%
Conservative	10	36	6	75	2	50
Embolectomy	0	0	0	0	2	50
Arterial Stenting	4	14	0	0	0	0
Primary amputation	12	43	2	25	0	0
Secondary amputation	2	7	0	0	0	0
Total	28	100	8	100	4	100

Rest pain was found to be the most common presenting symptom reflecting the very late presentations due to poor socioeconomic status of the patients. Intermittent claudication, gangrene, and ulcers were found in 18.5% of patients each in atherosclerosis and rest pain found in 77% of patients of atherosclerosis. In TAO, rest pain and ulceration were the most common presentations being seen in 67.5% of patients each.

Antiaggregant therapy (aspirin 75–162 mg/day or clopidogrel 75 mg/day) is recommended as secondary prevention strategy in patients with diabetes and a history of atherosclerotic cardiovascular disease and may be considered as primary prevention strategy in individuals with Type 1 or Type 2 diabetes who are at increased cardiovascular risk (this category includes most diabetic women and men aged ≥50 years with at least one additional major risk factor and not at increased risk of bleeding).[1,3]

Limitations of the study

The small sample size could be considered as a limitation to this study.

CONCLUSION

Atherosclerosis is mainly a disease of old age but now the trend is moving toward earlier decades as well. Hence, risk factor modification and awareness remain the best method of prevention. Embolectomy should be carried out aggressively in all cases with potentially salvageable limbs. It should be borne in mind that the same pathology affects vital organ systems such as heart and brain and appropriate vigilance maintained. TAO is an aggressive disease affecting young men in the prime of their lives causing severe morbidity if not managed vigorously. Complete abstinence from smoking is the only definitive therapy for this disease.

ACKNOWLEDGMENT

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