



## CLINICAL STUDY OF ETIOLOGY AND MANAGEMENT OF CHRONIC LOWER LIMB ISCHEMIA IN TERTIARY CARE HOSPITAL IN RAYALASEEMA REGION

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### KEYWORDS :

#### INTRODUCTION

Peripheral arterial disease includes those entities that result in arterial occlusion in vessels other than those of coronary and intra-cranial vascular bed and the term is usually applied to disease involving the arteries of lower extremity.<sup>1</sup>

Atherosclerosis, Buerger's disease, popliteal entrapment syndrome, cystic adventitial disease etc., are various forms of presentation of lower limb ischemia. Peripheral arterial disease is an important manifestation of atherosclerosis involving arteries of the limbs.<sup>2</sup> Vascular surgeons continue to encounter complications of atherosclerosis as their most common clinical challenge.<sup>3</sup>

Intermittent claudication, presented as pain in leg muscles during ambulation is the earliest and the most classical symptom among patients with Peripheral arterial disease.<sup>7</sup>

Thrombo angitis obliterans is an inflammatory occlusive disease primarily involves 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.<sup>8</sup>

Major amputation is eventually required in more than a third of patients once limb threatening symptoms and signs occur.<sup>11</sup> Nevertheless, 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.

#### DIAGNOSTIC CRITERIA FOR TAO

1. Presenting with features of lower limb ischemia,
2. History of tobacco use.
3. Younger age of onset.
4. Lesions of distal arterial occlusion.
5. Atherosclerotic risk factors like hyperlipidemia, diabetes, hypertension, hematologic disorders or potential source of embolus absent.
6. Radiological features:
  - i. Arterial calcification usually absent,
  - ii. Arterial wall is usually smooth,
  - iii. Lumen shows generalized narrowing,
  - iv. Abrupt occlusion of lumen,
  - v. Collaterals - Cork Screw, Spider leg, Tree root configuration of vessels,
  - vi. Coexisting aneurysm is rare.

#### DIAGNOSTIC CRITERIA FOR ATHEROSCLEROSIS

1. Presenting with features of limb ischemia.
2. History of tobacco usage may or may not be present.
3. Usual age of onset is older age.
4. Proximal or Distal arterial occlusion lesions.
5. Atherosclerotic risk factors like hyperlipidemia, diabetes, hypertension, hematologic disorders or potential source of embolus may be present.
6. Radiological features:
  - i. Arterial calcification usually present.

- ii. Arterial wall is usually irregular
- iii. Lumen shows localized or segmental narrowing or stenosis.
- iv. Gradual occlusion of lumen.
- v. Collaterals - normal or often larger.

#### AIMS AND OBJECTIVES

1. To study the modes of presentation of chronic lower limb ischemia.
2. To study the co-morbid conditions like diabetes, smoking and hypertension.
3. To assess treatment modalities with respect to outcome.

#### MATERIALS AND METHODS

This study was conducted by random selection of 50 cases with chronic lower limb ischemia admitted to surgical wards of Government General Hospital, attached to Kurnool Medical College, Kurnool.

This was a cross sectional and observational study of 50 cases diagnosed with chronic lower limb ischemia, done during the period from October 2015 to October 2017 after approval from Institutional Ethical Committee. 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.

Patients were further evaluated objectively by Doppler scanning and CT Angiography whenever feasible to assess the level and degree of obstruction objectively.

#### INCLUSION CRITERIA

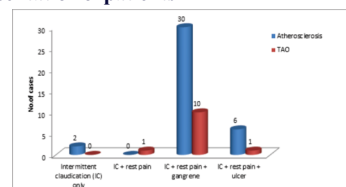
- Patients presenting with signs and symptoms of Peripheral Arterial disease of the lower extremities like intermittent claudication, rest pain, ulceration and gangrene.
- Patients with evidence of lower limb arterial occlusive disease on Doppler study.
- Patients with evidence of lower limb arterial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

#### EXCLUSION CRITERIA

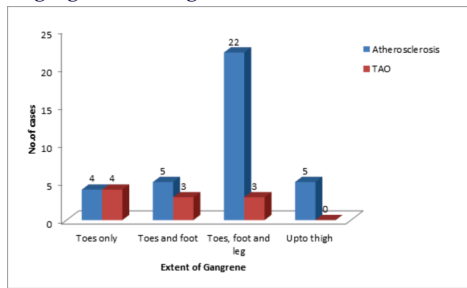
- Age below 20 years
- Patients with history of trauma to the lower extremities were excluded.
- Patients presenting with pain of skeletal or neurologic origin of lower limbs with or without evidence of ischemia.

#### RESULTS

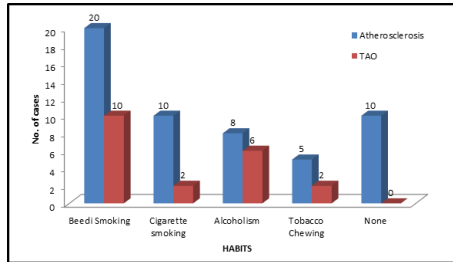
##### Clinical presentation of patients



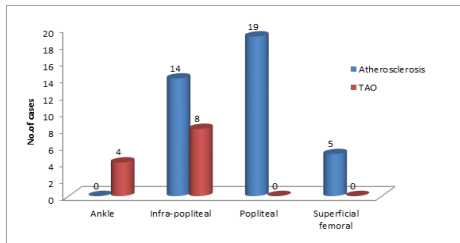
**Extent of gangrenous changes in lower limbs**



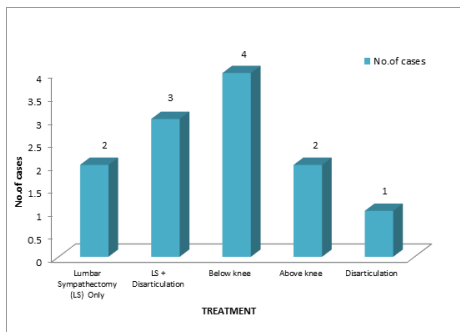
**Associated Habits**



**Arterial Doppler study findings in the affected limbs**



**TAO - Treatment**



**DISCUSSION**

**Distribution of etiology**

Out of the total 50 cases, 38(76%) cases were due to Atherosclerosis and 12 (24%) were due to Thrombo Angitis Obliterans. Atherosclerosis was a more common presentation in this study.

**Sex distribution**

Among the 38 cases diagnosed with PAD due to Atherosclerosis in this study 35 (92%) were males and 3(8%) patients were females. The female patients in this study were of the age group 65 years or older and had other associated co morbid diseases like diabetes mellitus and hypertension. In this study all the 12 patients diagnosed with TAO were male.

**Table 16: gender wise distribution of TAO**

Gender	Ranjan B study	Present study
Male	184(98%)	12(100%)
Female	4(2%)	0
Total	188	12

**Age distribution:**

Atherosclerosis was commonly seen among the age group of above 60

years 50% in this study and 92% cases were over the age of 50 yrs. 8% cases were seen in the age group of 41-50 yrs.

**Age wise distribution of Atherosclerosis and TAO**

Study	Atherosclerosis (above 60yrs)	TAO(31-50yrs)
Nigam R	56%	88%
Present	50%	92%

**CLINICAL PRESENTATION:**

In the present study, all the cases of PAD presented with intermittent claudication plus rest pain as common symptoms, while gangrene (80% of cases) and ischemic ulcer (14% of cases) were the predominant symptoms.

79% of the cases in the atherosclerosis group and 84% of the cases in the TAO group presented with gangrenous changes in the affected lower limb. Ischemic ulcer over the foot was present in 16% of the cases in the atherosclerosis group and 8% of the cases in the TAO group.

In this study, 40% of the cases in TAO group and only 11% cases in the Atherosclerosis group had gangrene limited to the toes only. In the atherosclerosis group, 61% cases presented with gangrene extending to the leg, and these patients were above the age of 60 years.

Habits In this study, history of smoking was present in 79% patients in the atherosclerosis group and in 100% of the patients in the TAO group. The patients in the TAO group were chronic smokers with history of smoking beedi or cigarette for 10 yrs or more, with 84% of the cases smoking beedies. In a study done by Nigam R, the incidence of smoking in TAO and atherosclerosis was reported to be 98% and 72% respectively.<sup>32</sup>

**Association of smoking habit in Atherosclerosis and TAO**

Habit of Smoking	Atherosclerosis	TAO
Nigam R Study	72%	98%
Present Study	79%	100%

**ASSOCIATED DISEASES**

**Diabetes Mellitus (DM)**

In the present study Diabetes mellitus (DM) was present in 30(79%) cases of atherosclerosis and none of the patients with TAO had DM.

**HYPERTENSION**

Hypertension was seen in 26% of the cases with atherosclerosis, whereas none of the TAO patients had associated hypertension.

**ISCHEMIC HEART DISEASE**

In the present study 5(13%) patients with atherosclerotic PAD gave a history of ischemic heart disease or had ECG changes suggestive of myocardial ischemia.

**Hypercholesterolemia**

In the present study 2(5%) patients had hypercholesterolemia and were also diabetic.

**Arterial Doppler study**

Femoral block was seen in 5(13%) cases and all these patients had no distal collaterals. None of the atherosclerotic patients had disease limited to the ankle.

In the TAO group, the commonest site of arterial block was infra-popliteal vessels, seen in 8(67%) of the cases.

The most frequently affected arteries in the lower extremities were the anterior (41.4%) or posterior (40.4%) tibial arteries.

**CT Angiogram study**

Femoral block was seen in 7 (20%) cases and all these patients had no distal collaterals.

In the TAO group, the commonest site of arterial block was infra-popliteal vessels, seen in 7(58%) of the cases. None had popliteal vessel disease and none extended to the femoral artery. Disease limited to the ankle vessels was seen in 5 (42%) of the TAO cases.

### Management modalities

All the patients in this study were initially started on conservative management, and eventually underwent different modalities of surgical management.

- Lumbar Sympathectomy (LS) : In the present series of 50 cases, 2 patients were managed by LS alone.
- Amputation: In the present 50 cases, 38 patients had undergone major amputation during their attendance at the hospital at different times. 22 (57%) patients underwent above knee amputation and 16(42%) patients underwent below knee amputation.
- LS and Disarticulation: In the present 50 cases, 3 patients were also subjected to disarticulation in addition to lumbar Sympathectomy.
- Disarticulation: Total of 5 patients were subjected to disarticulation of toe/toes.

"Stop smoking and start walking", should be the carry home message for all PVD patients.

### SUMMARY

In the present study, 50 cases of Peripheral Arterial disease of the lower extremities were evaluated during the period from October 2015 to October 2017.

- The youngest patient was 27 years of age and suffered from TAO, the oldest patient was 68 yrs of age and suffered from Atherosclerosis and oldest patient of TAO was 48 years.
- The commonest age group affected by TAO is between 31 to 40 yrs and those affected with Atherosclerosis is above the age of 60 yrs.
- All patients with TAO had a history of chronic smoking and 79% of Atherosclerosis patients had a history of smoking.
- In the present study, all the cases of PAD presented with ischemic claudication and rest pain as common symptoms, while gangrene (80% of cases) and ischemic ulcer (14% of cases) were the other predominant symptoms.
- 40 (80%) 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 16 (42%) and above knee in 22 (57%) 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.
- Post operatively 43 had uneventful recovery, 4 required secondary suturing, 1 patient required revision amputation at a higher level.
- Two cases were managed conservatively.

### CONCLUSION

The present study consists of 50 cases presenting with Peripheral Arterial disease of the lower extremities and following are the conclusions which are drawn from the present study:

- Atherosclerosis being more common.
- TAO presented at a younger age group whereas atherosclerosis presented in the older age group.
- All the cases of PAD presented with ischemic claudication and rest pain as common symptoms, while gangrene (80% of cases) and ischemic ulcer (14% of cases) were the other predominant symptoms.
- Gangrene was limited to the distal limb in the TAO cases and extended to the proximal limb in atherosclerosis.
- Atherosclerosis is more frequently associated with Diabetes mellitus.
- Lumbar Sympathectomy had helped in Improvement of rest pain noted in 60% of cases.
- The level of amputation was below knee in 16 (42%) and above knee in 22 (57%) cases.
- 48 cases were managed with some form of surgery and 38 of them had limb loss. This is due to late presentation with gangrenous changes, thus leaving no scope for limb salvage. 2 cases managed conservatively.
- Post operatively 1 of the cases required revision amputation.

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