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A CLINICAL STUDY ON DISEASE COURSE AND MANAGEMENT OF BUERGER'S DISEASE

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ABSTRACT

AIM: The aim of the present study was to evaluate the patient and to assess the severity of Buerger's disease.

MATERIAL & METHODS: A Randomized control trial includes Forty patients in the age group of 20-50 years who were smokers, presenting with symptoms of ischemia in limbs and were admitted in Gandhi Medical College and Hospital were taken up for study for the period of 27 months The treatment of each patient was individualized with the aim to achieve limb salvage wherever feasible. A record of patient's progress and response to various modalities of treatment was made to evaluate severity of disease, in long term prognosis and also evaluate the efficacy of treatment. Patients who returned for follow up were followed up for minimum of six months during each follow up detailed history was taken and progress of the disease was assessed.

RESULTS: Among the 40 patients studied 65% of patients were diagnosed in the third decade and 9 cases were diagnosed after the age of 40 years. Out of 40 patients 75% were from low socio-economic status, shows that there is predisposition of TAO in patients of lower socio-economic status. Heavy smokers, constituting 90% who smoked more than 20-25 beedis per day and 10% were moderate smokers who smoked between 10-20 beedis / day were diagnosed with this disease. Out of the 40 cases studied gangrene was present in 75% & ulceration was present in 25% patients.

CONCLUSION: Thromboangiitis obliterans is a peripheral vascular disease which usually affects young males, involves predominantly the lower limbs than upper limbs mainly occurs in the third decade with lower socio-economic strata & smokers are commonly involved.

KEYWORDS: Buerger's disease, TAO, peripheral vascular disease

INTRODUCTION

TAO is characterized by occlusive segmental and often multiple lesions of medium-sized and small arteries and veins in young male smokers. The etiology of TAO remains obscure, and

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the prevalence of TAO in Japan appears to be decreasing.[1] This panarteritis affects men ages between 25 and 35 years and can involve arteries, veins and nerves of arm and legs.[2] Extraordinary manifestations of TAO can involve the gastrointestinal, cerebrovascular, coronary and renal arteries.[3,4] The prevalence of the disease among all patients with peripheral arterial disease varies from as low as 0.5 to 5.6% in Western Europe to as high as 45 to 63% in India, 16 to 66% in Korea and Japan, and 80% in Israel among Jews of Ashkenazi ancestry.[5]

The pathological features accompanying TAO are categorized in three phases including acute, subacute and chronic, according to the thrombus pattern and the nature of the inflammatory cells. In contrast to other forms of vasculitis, the normal structure of the affected vessel, and particularly the internal elastic lamina, remains intact in all three phases of TAO.[6]

The main characteristic of the acute phase is a hypercellular and inflammatory thrombus with minimal inflammation in the vascular wall of the affected vessel. In this phase, the polymorphonuclear (PMN) leukocytes are predominant cells at the site of inflammation, which may form microabscesses within the thrombus. However, in the subacute phase, PMNs in the microabscesses are surrounded by a granulomatous inflammation, which may lead to organization and recanalization of the thrombus. Finally, the mature thrombus with vascular fibrosis is observed in the end-stage phase.[7]

Although smoking is considered to be the most important risk factor of TAO, the essence of this relationship remains unclear until now. Endothelial cells play a key role in initiation and perpetuation of the inflammatory response and endothelial dysfunction in turn is reflected by impaired endothelium-dependent vasorelaxation, observed in studies on forearm blood flow.[8,9] Thus our study was conducted to evaluate the patient and to assess the severity of Buerger's disease.

MATERIAL & METHODOLOGY

A study of Randomized control trial includes Forty patients in the age group of 20-50 years who were smokers, presenting with symptoms of ischemia in limbs and were admitted in Gandhi Medical College and Hospital were taken up for study for the period of 27 months.

The treatment of each patient was individualized with the aim to achieve limb salvage wherever feasible. A record of patient's progress and response to various modalities of treatment was made to evaluate severity of disease, in long term prognosis and also evaluate the efficacy of treatment. Patients who returned for follow up were followed up for minimum of six months during each follow up detailed history was taken and progress of the disease was assessed. Based on history, physical examination and investigation patients were either included or excluded from study.

Inclusion Criteria

Following patients admitted to Gandhi Medical College with symptoms of ischemia of upper and lower limbs were included in the study.

1. Age between 20yrs and 50yrs.
2. Chronic smoker.
3. Patients with rest pain, intermittent claudication, ischemic ulcer and gangrene.

Exclusion Criteria

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Following patients admitted to Gandhi Medical College who presented with symptoms of ischemia of upper / lower limb were excluded from study.

1. Age less than 20yrs and more than 50yrs.
2. Autoimmune diseases.
3. Presence of atherosclerotic risk factor other than smoking – diabetes mellitus, hypertension, hyperlipidemia.

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 and blood pressure measured to rule out hypertension. 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 rule out presence of atherosclerotic risk factors, the presence of which formed basis for exclusion of the patient from study. Patients were further evaluated objectively by Doppler scanning whenever feasible to assess the level and degree of obstruction objectively and for confirmation of infra-popliteal segment involvement.

RESULTS

Table 1: Age, SES, Smoking & Local Examination distribution

AGE	AGE (in yrs.)	No. of Patients	%
	21-30	05	12.5
	31-40	26	65
	41-50	09	22.5
Socio Economic status	SES	No. of Patients	%
	Lower	30	75
	Middle	08	20
	Upper	02	05
Smoking History	PRESENT	No. of Patients	%
	HEAVY	36	90
	MODERATE	04	10
Local examination		No. of Patients	%
	Gangrene	30	75
	Ulceration	10	25
	Superficial thrombophlebitis	0	0

Among the 40 patients studied 65% of patients were diagnosed in the third decade and

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9 cases were diagnosed after the age of 40 years. Out of 40 patients 75% were from low socio-economic status, shows that there is predisposition of TAO in patients of lower socio-economic status. Heavy smokers, constituting 90% who smoked more than 20-25 beedis per day and 10% were moderate smokers who smoked between 10-20 beedis / day were diagnosed with this disease. Out of the 40 cases studied gangrene was present in 75% & ulceration was present in 25% patients.

Table 2: Mode of presentations

Mode of presentation	Right (n=40)		Left (n=40)		Total (n=80)	
	No	%	No	%	No	%
Intermittent Claudication	22	55.0	18	45.0	40	50.0
Rest pain	16	40.0	15	37.5	31	38.8
Gangrene	9	22.5	6	15.0	15	18.8
Ulceration	5	12.5	5	12.5	10	12.5
Superficial thrombophlebitis	0	0	0	0	0	0
Raynaud's Phenomenon	0	0	0	0	0	0

Table 3: Incidence of upper and lower limb Involvement

Limb Involvement	Number of patients(n=40)	%
Lower limb	40	100.0
Right	19	47.5
Left	15	37.5

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Both	6	15.0
Upper Limb	1	2.5
Right	1	2.5
Left	0	0.0
Both UL and LL	1	2.5

Of the 40 patients presenting with involvement of lower limbs, 15 patients (37.5%) had involvement of left lower limb, 19 patients (47.5%) had involvement of right lower limb and 6 patients (15%) had bilateral involvement of lower limbs. Only one patient had involvement of both upper and lower limbs. In that patient right lower limb was also involved.

Table 4: Peripheral vessels involvement

Peripheral Vessels	No. of patients	%
Dorsalis pedis artery	02	05
Posterior tibial artery	00	00
Dorsalis pedis and posterior tibial artery	40	100
Dorsalis pedis, posterior tibial and popliteal artery	10	25
Radial and ulnar artery	01	2.5

40 patients (100%) had combined involvement of Dorsalis pedis and posterior tibial arteries and 10 patients (25%) had involvement of all the three arteries i.e., dorsalis pedis, popliteal and posterior tibial. Only 1 patient (2.5%) had radial and ulnar involvement in addition to lower limb involvement.

Table 5: Doppler scanning, Treatment Modalities & Follow up

Doppler scanning		Number of patients (n=40)	%
	Positive	40	100
Treatment Modalities		Number of patients	%
	Conservative management	15	37.5
	Disarticulations	15	37.5
	Amputations	10	25
Follow up		Number of patients	%
	Yes	12	30

	No	28	70

Doppler study of the arterial system was done in all the patients. 37.5% patients were managed conservatively & by disarticulation. In 25% cases amputation was done

DISCUSSION

It can be appreciated from this study that this disease involves all the four limbs. It affects young men. 40 patients were studied based on the clinical criteria. Among the 40 patients studied 65% of patients were diagnosed in the third decade and 9 cases were diagnosed after the age of 40 years. This is similar to the age incidence as reported by Lau H and Cheng [10] in a study of 89 cases in Hong Kong. Our study included only males as the disease is rare in women and also because of the fact that women in India rarely smoke. History of familial cases of Buerger's disease were not seen in our study. Buerger had given age incidence of TAO between 20-30 years. His average being 32 years and 5 months. Homan's series (1936) lies between 20-40 years and Wright's (1948) between 40-55 yrs. In this study, 30 patients (75%) were from low socio-economic status, 8 patients (20%) were from middle class and only 2 patient (5%) was from higher socio-economic status. This clearly shows that there is predisposition of TAO in patients of lower socio-economic status.

Incidence of involvement of upper and lower limbs

In this series, all patients had involvement of lower extremities constituting 100% of the Involvement and 1 patient (2.5%) had involvement of both upper as well as lower extremities. No cases in my series with only upper limb involvement were present. Of the 40 patients presenting with involvement of lower limbs, 15 patients (37.5%) had involvement of left lower limb, 19 patients (47.5%) had involvement of right lower limb and 6 patients (15%) had bilateral involvement of lower limbs. Only one patient had involvement of both upper and lower limbs. In that patient right lower limb was also involved.

Smoking distribution

The analysis of smoking history clearly shows how closely habituated these patients were to smoking. Most of the patients in the series were heavy smokers, constituting 36 patients (90%) who smoked more than 20-25 beedis per day and 4 patients (10%) were moderate smokers who smoked between 10-20 beedis / day. According to Hill et al [11] found that all the patients were cigarette smokers and patients who smoked more than 10 cigarettes per day had a much worser prognosis than those who smoked less than that.

Clinical Presentation

Out of the 40 cases studied gangrene was present in 30 patients (75%). 20 patients had gangrene of one or more toes and other 10 patients had gangrene of the whole of forefoot. The mode of presentation was insidious in all the cases. In my study of 40 patients, all the patients had one or more signs of chronic ischemia. Out of 40 cases studied, ulceration was present in 10 patients (25%). Invariably the ulcers were seen at the tip of the toes, under surface or near the nail bed, due to pressure effects. Of the 30 patients presenting with gangrene, 12 patients (40%) had a definite line of demarcation and other 18 patients (60%) did not have definite line of demarcation. In all 40 cases studied there was evidence of

impaired arterial pulsation on physical examination. The severity of symptoms also varied according to the site of arterial block. 40 patients (100%) had combined involvement of Dorsalis pedis and posterior tibial arteries and 10 patients (25%) had involvement of all the three arteries i.e., dorsalis pedis, popliteal and posterior tibial. Only 1 patient (2.5%) had radial and ulnar involvement in addition to lower limb involvement. In the present study all the patients had infrapopliteal pulsation involvement which is in accordance with the available literature on Buerger's disease [12].

Treatment

Complete cessation of smoking was strongly advised as it is the mainstay of therapy. A variety of drugs were used in the medical management which include Tab Aspirin 150 mg od, Tab Trental 400 mg tid, Tab Cilostazole 100 mg bd (in affordable patients as it is an expensive drug). Analgesics were used to relieve pain.

Conservative:

In the present series of 40 cases studied by me, 15 patients were managed conservatively (37.5%). They were treated by vasodilators, exercise therapy and local care of ulcer.

Amputation:

In my 40 cases, 10 patients had undergone major amputation during their attendance at the hospital at different times. In those 2 patients underwent above knee amputation and 8 patients underwent below knee amputation.

Disarticulation:

Total of 15 patients were subjected to disarticulation of toe/toes

In this series, all patients had involvement of lower extremities constituting 100% of the Involvement and 1 patient (2.5%) had involvement of both upper as well as lower extremities. No cases in my series with only upper limb involvement were present.

Of the 40 patients presenting with involvement of lower limbs, 15 patients (37.5%) had involvement of left lower limb, 19 patients (47.5%) had involvement of right lower limb and 6 patients (15%) had bilateral involvement of lower limbs. Only one patient had involvement of both upper and lower limbs. In that patient right lower limb was also involved.

CONCLUSION

Thromboangiitis obliterans is a peripheral vascular disease which usually affects young males, involves predominantly the lower limbs than upper limbs mainly occur in the third decade with lower socio-economic strata & smokers are commonly involved. Lower limb is commonly involved which showed gangrenous changes. Treatment needed surgical intervention in the form of minor disarticulations and few patients also needed below knee and above knee amputations of the lower limb.

REFERENCES

1. Matsushita M, Nishikimi N, Sakurai T, Nimura Y. Decrease in prevalence of Buerger's disease in Japan. Surgery. 1998; 124: 498–502

2. Ates A., Yekeler I., Ceviz M., Erkut B., Pac M., Basoglu A. One of the most frequent vascular diseases in northeastern of Turkey: thromboangiitis obliterans or Buerger's disease (experience with 344 cases) Int. J. Cardiol. 2006;111:147–15
3. Kröger K. Buerger's disease: what has the last decade taught us? Eur. J. Intern. Med. 2006;17:227–234.
4. Yun H., Kim D., Lee K., Lim S., Hwang W., Yun S. End stage renal disease caused by thromboangiitis obliterans: a case report. J. Med. Case Rep. 2015;9:174.
5. Olin J. Thromboangiitis obliterans (Buerger's disease) N. Engl. J. Med. 2000 Sep 21;343(12):864–869.
6. Piazza G., Creager M. Thromboangiiti obliterans. Circulation. 2010;121:1858–1861.
7. Fazeli B., Rezaee S. A review on thromboangiitis obliterans pathophysiology: thrombosis and angiitis, which is to blame? Vascular. 2011;19:141–153.
8. Małecki R., Zdrojowy K., Adamiec R. Thromboangiitis obliterans in the 21st century a new face of disease. Atherosclerosis. 2009;206:328–334.
9. Azizi M., Boutouyrie P., Bura-Rivière A., Peyrard S., Laurent S., Fiessinger J. Thromboangiitis obliterans and endothelial function. Eur. J. Clin. Investig. 2010;40:518–526.
10. Heuser C. Pieloradiograpia con ioduro potasico Y Las injecciones intravenosus de ioduro potasico en radiografica. Sem Med 1919; 26: 424.
11. Hill GL, Moeliono F, Tomewu D, Bratanada and Tohardi A.The Buerger’s syndrome in Java.A description of the clinical syndrome and some aspects of its etiology. Br J Surg 1973; 60 (8) : 606-613.
12. Shionoya S, Buerger’s disease: Pathology, Diagnosis and Treatment. Nagoya.University of Nagoya press 1990; p261.