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Original Research Article

Incidence of peripheral arterial disease in eastern part of Uttar Pradesh, India in a tertiary hospital and its management

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ABSTRACT

Background: Peripheral artery diseases, group of some pathological conditions affecting limbs are chronic and gradually progressing causing limitation in blood flow. to assess the incidence, related factors and treatment comparison of peripheral arterial diseases in eastern part of Uttar Pradesh.
Methods: All the patients come to OPD with suspected peripheral arterial disease are evaluated with proper history taking, investigation and diagnosed the specific pathology and treated accordingly. From these 40 patients conclusions have been made.
Results: Majority of the patients were suffered from thromboangitis obliterans (42.55%). Arteriosclerosis obliterans constitute only 12.55% of peripheral arterial disorders.25%were congregation of miscellaneous arterial disorders viz. Rheumatoid arthritis (3 cases), infective gangrene and non-healing ulcers (5 cases) and 2 cases of arteriovenous fistula.
Conclusions: Most common peripheral arterial disease is thromboangitis obliterans. Males are commonly affected by peripheral arterial diseases. But incidence of Buerger's disease increase in females because of increasing habits of smoking and tobacco addiction in any form. Most of patients of T.A.O were villagers while A.S.O, diabetic arteriopathy, vasospastic disease and rheumatoid arthritis commonly affected urban population. Sympathectomies yields good results in early stages of thromboangitis obliterans and vasospastic disease.

Keywords: Peripheral disease in india, Incidence of peripheral disease in india and its management

INTRODUCTION

Peripheral artery diseases, group of some pathological conditions affecting limbs are chronic and gradually progressing causing limitation in blood flow. Diseases of the peripheral arterial system hamper the nutrition of the part and cause more disabilities than other systems. Disorder of the system produce wide spectrum of complications ranging from minor disabilities to loss of the limb. Therefore, early diagnosis and effective treatment is always rewarded with good prognosis and averts dreadful complications. Smoking, high blood pressure, high cholesterol or triglyceride, diabetes, obesity increase the risk for PAD. Presenting complains are intermittent pain rest pain altered sensation Raynaud's phenomenon joint pain and ulceration. Incidence of arterial occlusive disorders is highest among all arterial diseases and therefore, it draws attention of surgeon for study. It constitutes arteriosclerosis obliterans, thromboangiitis obliterans, embolic phenomenon, thrombosis, etc Study of these diseases aims at their incidence early detection, clinical course and

result of various therapeutic implications which are available at our set up. Among the peripheral arterial disorders, listed by Kelkar, degenerative disorders of arterial tree are most common.[1]

Next common disorder is vasospastic diseases and less commoner ones are thermal and chemical injuries of arterial tree patient are from eastern part of Uttar Pradesh presenting to our hospital. Study of these disease aims at their incidence, early detection, clinical course and result of various therapeutic implications which are available at our set up.

METHODS

All the patients come to OPD with suspected peripheral arterial disease are evaluated with proper history taking, investigation and diagnosed the specific pathology and treated accordingly. All the patient go through colour Doppler test of lower limb: ultrasound images are obtained by holding a probe on the skin surface.

An ultrasonic scanner usually has a range of probes with different characteristics, and for lower-limb vascular scanning a linear array probe is normally used. This produces a rectangular image which is displayed with the skin surface at the top, the vertical axis showing depth into the body and the horizontal axis showing position along the probe. When imaging blood vessels, the probe can either be placed along the vessel to produce a longitudinal scan or across the vessel to produce a transverse scan.

The probe determines the frequency of the ultrasound within the pulses. Frequencies between 3 and 7 MHz are generally used for peripheral vascular imaging. Higher frequencies give better resolution and more detailed images, but the higher frequency sound loses energy more quickly as it travels through the body, so the depth of penetration is less. The operator usually uses as high a frequency as possible. Ultrasound of these frequencies. does not travel through air, so a layer of water-based coupling medium is used between probe and skin. The image is called a grayscale image because different shades of grey are used to indicate the strength of the received echoes, stronger signals being represented more brightly.

The operator has placed a 'gate' in the image of the artery, and the blood velocity waveform is displayed. In the common and superficial femoral arteries, the waveform normally has a forwarded component followed by a reverse component and a second smaller forward component. This is called a triphasic waveform because of the three phases. More distally in the superficial femoral artery, the second forward component may be absent, ic waveform with two phases.

Colour Doppler scanners detect and display moving structures by superimposing colour onto the grey-scale image. The operator positions a box on the image, and colour is superimposed wherever the scanner detects a moving structure, usually blood.

Figure 6 shows a colour Doppler image of the popliteal artery behind the knee. The colour fills the lumen of the vessels, showing that the blood is moving right up to the vessels wall. The hue of the colour shows the direction and magnitude of the blood velocity. In this image, red and yellow indicate flow away from the probe, with dark red representing low velocities and orange and yellow indicating higher velocities. Flowtowards the probe is indicated in blue and green, with green indicating higher.

A significant stenosis is normally taken to be one that more than doubles the blood velocity. The site of any significant stenosis is marked on the skin surface and the distance from the vessel organic and the increase in velocity recorded. The plaque causing the stenosis can be seen and the colour Doppler shows aliasing.

The peak systolic blood velocity increases from 0.26 proximally to 3.90m/s through the stenosis and increase by a factor of 15 indicating a very tight stenosis. The main chief complains are intermittent claudicaton, rest pain, ulcerations, altered sensation, superficial thrombophlebitis, gangrene, Raynaud's phenomenon, joint pain and injury. Along with their occupation, living standard, addiction habbit, food habit from these 40 patients conclusions have been made.

RESULTS

40 patients of peripheral arterial disorders were admitted in our hospital from August 2011 to July 2012. We distributed the patients according to their ages, sex, occupations.

Table 1: Disease distribution among 40 cases of peripheral arterial diseases.

Disease	No. of cases	Percentage
TAO	17	42.55
ASO		
Non-Diabetic	2	12.55
Diabetic	3	
Diabetic arteriopathy	5	12.55
Vaso-spastic disorder	3	7.56
Others	10	
Rheumatoid Arthritis	3	25.00
Infective	5	
A.V. Fistula	2	
Total	40	100

Patients were also distributed according to their addictions.

All the patients of thromboangiitis obliterans were addicted to tobacco. 29.41 percent of cases were also

addicted to alcohol. Out of 5 cases of arteriosclerosis obliterans only 2 were smokers (40 percent). 60 Percent of diabetic arteriopathy were non-smokers. Most of the cases of vasospastic disorders were non-smokers.

Table 2: Age incidences of peripheral arterial disease.

Ages in years	T.A.O(%)	A.S.O(%)	Diabetic Art (%)	V.S.D(%)	Rh. Arth. (%)	Other (%)
76-85		1				
66-75		2 (40)				
56-65		2 (40)				
46-55	2		3 (66.33)		1	
36-45	5 (29.41)		2			
26-35	8 (47.05)			2 (66.67)		
16-25	2			1	2 (66.67)	
Total	17	5	5	3	3	7

Table 3: Distribution of disease according to sex.

Disease	Male (%)	Female (%)
T.A.O	15 (88.23)	2 (11.77)
A.S.O		
Non-diabetic	4 (80.00)	1 (20.00)
Diabetic		
Diabetic arteriopathy	4 (80.00)	1 (20.00)
Vaso-spastic disorder	2 (66.67)	1 (33.33)
Others		
Rheumatoid Arthritis	2 (66.67)	1 (33.33)
Infective	3 (60.00)	2 (40.00)
A.V. Fistula	0	2
Total	30	10

Table 4: Distribution of disease according to occupation.

Occupation	T.A.O (%)	A.S.O (%)	Diabetic Art. (%)	V.S.D(%)	Rh. Arth (%)	Other (%)
Labour	12 (70.58)	1 (20)	2 (40)	2 (66.67)	1 (33.33)	
Sedentary	4 (23.52)	3 (60)	3 (60)		1 (33.33)	
Housewives	1 (5.88)	1 (20)		1 (33.33)	1 (33.33)	
Total	17	5	5	3	3	7

Table 5: Incidences of addiction to tobacco and/or alcohol.

Type	Diseases					
	T.A.O. (%)	A.S.O. (%)	Diabetic Art (%)	V.S.D. (%)	Rh. Arth. (%)	Other (%)
Tobacco	12 (70.58)	2 (40)	2 (40)	1 (33.33)	--	2 (28.57)
Alcohol	--	1 (20)	--	--	--	--
Both	5 (29.41)	--	--	--	--	2 (28.57)
None	--	2 (40)	3 (60)	2 (66.67)	3 (100)	3 (42.5)
Total	17	5	5	3	3	7

The commonest symptom was pain. This pain was either intermittent claudicating or rest pain. Commonest cause was thromboangiitis obliterans. (52.94 percent) of cases had intermittent claudicating and 58.82 percent had rest pain). This ischemic pain was observed in 40 percent cases of arteriosclerosis obliterans, 40 percent of diabetic arteriopathy cases, 33.33 percent of vasospastic diseases, 33.33 percent of rheumatoid arthritis cases and in 40 percent of cases of inflammatory group.

Next common symptom was altered sensation. In cases of thromboangiitis obliterans sense of coldness was marked (76.47 percent) and altered sensations were present in 41.17 percent of cases. Altered sensations were

observed in 100 percent and coldness of limbs in 66.67 percent of cases of vasospastic disorders. In cases of arteriosclerosis obliterans (20 percent) and diabetic arteriopathy (40 percent) there were altered sensation e.g. burning, tingling sensation, whereas cases of coldness. was very rare.

Raynaud's phenomenon was observed in cases of thromboangiitis obliterans (23.52 percent) and vasospatic disorder (100 percent). None of the case of arteriosclerosis obliterans, diabetic arteriopathy and rheumatioid vasculitishad this phenomenon.

Table 6: Presenting features in 40 cases of peripheral arterial disease.

	Diseases						
	T.A.O. (%)	A.S.O. (%)	Diabetic Art (%)	V.S.D. (%)	Rh. Arth (%)	I.G. (%)	A.V. Fistula (%)
Intermittent claudication	5 (29.41)	1 (20)	-	-	-	-	-
Rest Pain	-	1	-	-	-	-	-
Ulceration	4 (23.52)	2 (40)	2 (40)	-	-	2 (40)	
Altered Sensation	3 (17.64)	-	3 (60)	2 (66.67)	-	-	-
Superficial Thrombophlebitis	2 (11.76)	-	-	-	-	-	-
Gangrene	1 (5.88)	1 (20)	-	-	-	-	-
Raynaud's Phenomenon	2 (11.76)	-	-	1 (33.33)	-	-	-
Joint Pains	-	-	-	-	3 (100)	-	-
Injury	-	-	-	-	-	3 (60)	2
Total	17	5	5	3	3	5	2

Table 7: Number of cases and limbs subjected to Colour Doppler study.

Disease Group (Total cases)	Total cases	No. of patients subjected to Colour Doppler study	Limbs subjected to Colour Doppler study		
			Upper limbs	Lower limbs	Total limbs
T.A.O.	17	15	10	11	21
A.S.O.	5	4	0	5	5
D.A.	5	4	2	4	6
V.S.D.	3	3	1	2	3
Rh. Arth.	3	3	5	0	5
Infective Gr.	5	4	1	3	4
A.V.F.	2	1	0	1	1
Total	40	34	19	26	45

In 5.88 percent cases of thromboangiitis obliterans and 20 percent cases of arteriosclerosis obliterans impotency was observed. While migrating thrombophlebitis was found in 11.76 percent cases of thromboangiitis obliterans. Joint pain was present in all cases of rhematoid arthritis and 40 percent. cases of arteriosclerosis obliterans. Colour doppler study was done in 34 cases out of 40 patients

Treatment

These patients received two types of treatment viz. Medical combined with local dressings and surgical interventions.

Medical treatment consisted of antibiotics, antacids, analgesics, vasodilator drugs, antiplatelet, phosphodiesterase inhibitor cholesterol lowering platelet, subcutaneous injection of insulin.

This gave good result in cases of arteriosclerosis obliterans (100 percent); inflammatory wasculaitis (75 percent), diabetic arteriopathy (50 percent); while it was useless in cases of vasospastic diseases (100 percent) and thromboangiitis obliterans (83.33 percent).

Figure 1: Right foot: changes showing of a burger's disease.

Surgical treatment was given to all those cases who were not benefited medical treatment. 13 patients of thromboangiitis obliterans underwent sympahtectomies.

Table 8: Evaluation of medical treatment.

Cases	No.	Total patients received treatment	Results of medical treatment	
			No relief (%)	Ful relief (%)
T.A.O.	17	6	5 (83.33)	1 (16.67)
A.S.O.	5	4	0	4 (100.00)
D.A.	5	2	1 (50.00)	1 (50.00)
V.S.D.	3	2	2 (100.00)	0
I.G.	5	4	1 (25.00)	3 (75.00)
R.A.	3	3	1 (33.33)	2 (66.67)

Out of which, only 2 were not benefited by this operation, whereas in rest 11 cases clinical improvement was observed in the form of subsidence of oedema, subjective feeling of warm limb, etc. Sympathectomy yielded good results in all the cases of vasopastic conditions.

Table 9: Evaluation of surgical treatment.

Cases	Total patients received treatment	Results of medical treatment	
		No relief (%)	Full relief (%)
T.A.O.	13	2(15.39)	11(84.61)
A.S.O.	1	0	0
D.A.	0	0	0
V.S.D.	3	0	3(1900.00)
I.G.	0	0	0
R.A.	1	0	1(100.00)

One case of arteriosclerosis obliterans underwent Fogarty's dilatation with thrombectomy but there was severe norrowing of lumen of femoral artery in adductor canal so femoropopliteal bypass procedure was done using ipsilateral saphenous vein. Patient get symptomatically relieved and ulcer over foot heale.

DISCUSSION

Most common peripheral arterial disease is thromboangiitis obliterans, while arteriosclerosis obliterans and vasospastic diseases are not so common. Thromboangitis obliterans, vasospastic diseases and diabetic arteriopathy affect commonly younger age group than arteriosclerosis obiterans in which older people are much more affected.[2] Males are commonly affected by peripheral arterial diseases.

But incidence of Buerger ‘s disease increase in females because of increasing habits of smoking and tobacco addiction in any form. In the present study male-female ratio of A.S.O in the present study was 4:1.[3] In the present study, 70.58% of cases of T.A.O were outdoor hard workers while only 29.44% were indoor workers.Thish findings was in conformity with Som and Agarwal.[4]

In the present study, lower limbs were mostly affected by peripheral arterial diseases. In thromboangitis obliterans the incidence was 70.52%, in A.S.O 100%, in diabetic arteriopathy 60%. These incidences are similar to those reported by Gupta et al, Nigam et al.[5] In the present study upper limb involvement in T.A.O was 41.16% which was in conformity with Abramson.[6]

Most of the patients of thromboangitis obliterans were villagers while arteriosclerosis obliteran, diabetic arteriopathy, vasospastic diseases and rheumatoid arthritis commonly affected urban population. Thromboangitis obliterans is a disease which affects lower- and middle-class people who smoke heavily for long duration. Vasospastic disorders are commonly found in low social class and housewives who are in close contact of cold water and /or environment. A.S.O, diabetic arteriopathy and rheumatoid arthritis commonly affect sedentaries, non-smokers and all class people. T.A.O is a progressive disease its course is closely related to tobacco addiction.

Common early presenting symptoms in thromboangitis obliterans is intermittent claudication, ulceration. A.S.O is initially presented with ulceration of toes or feet. Paresthesia is initially symptom in vasospastic disease and diabetic arteriopathy. Ischaemic pain is very common symptom among cases of thromboangitis obliterans and arteriosclerosis obliterans. Atrophic changes of the limb is found in almost all cases of peripheral arterial disease. Ulceration AMD gangrene are not early features in peripheral arterial diseases.

Colour Doppler study is the safest, informative and accurate investigation regarding establishment of the diagnosis of peripheral arterial diseases. Most common finding in cases of thromboangitis obliterans on colour Doppler study was arterial occlusion (95.24).thish observation was similar to that of Lambeth.[7]

Case of A.S.O, inflammatory vasculitis and diabetic arteriopathy respond to medical treatment very well. Most of the cases of T.A.O and vasospastic diseaseneeds surgical intervention. Sympathectomies yields good results in early stages of T.A.O and vasospastic disease .Late stage of T.A.O and those cases, who resume smoking habits are the worst cases with need amputation of part at later date.

Recent advances in the treatment of peripheral arterial disease are percutaneous endorevascularization of the affected vessels of critical ischemic limb, endovascular treatment of peripheral artery disease with expanded PTEE-coverednitinol stents.[8]

The Dutch iliac stent trial is enrolling patient to do a prospective, double blind, controlled, multicentric study

between covered Balloon-Expandable versus uncovered Balloon-Expandable in the common iliac artery. We cannot answer which is better till the publish of result of this trial or alike.[9] Stenting is preffered more and more over arterial bypass surgery though which is better is still under study.[10]

CONCLUSION

Though modern facilities are not available, lumber sympathectomy shows a good result specially in pain management.

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