

Clinical Features Of Buerger's Disease And Therapeutic Results Of Sympathectomy In Iranians

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Citation

Mohammadzadeh, Yadegari, Manzar, H Akbar. *Clinical Features Of Buerger's Disease And Therapeutic Results Of Sympathectomy In Iranians*. The Internet Journal of Family Practice. 2000 Volume 2 Number 1.

Abstract

Buerger's disease (thromboangiitis obliterans) is a rare peripheral vascular disease that usually affects young male smokers. It is characterized by multiple occlusions distal to the knee and elbow. Buerger's disease is a peripheral arterial occlusive disease that is becoming rare in Western countries but is more common in Asia. To evaluate the role of sympathectomy in Buerger's disease, we carried out this study and investigated the changes in the prevalence and characteristics of Buerger's disease at a major surgical institution in Iran. Among 100 sympathectomized patients (84 % male and 16 % female) as a whole 266 organs were involved and solitary involvement of only upper limb was the rarity (in 8.7 %). Most of the cases (70 %) were in the age group of 31-45 years. In various types of sympathectomy performed, right lumbar was the commonest (51.1 %). Then was left lumbar (33.3 %) and bilateral lumbar sympathectomy (15.55 %). 65.9 % of Buerger's disease patients smoked 6-20 cigarettes daily. 90.9% male and 9.1% female were cigarette smokers. 12 % (4 male and 8 female) were non-smokers. All the nonsmokers showed good response to sympathectomy). 86% of sympathectomized cases showed appropriate response immediately after surgery. 7% showed late response resulting in pain relief, warmth and flashing of the organ after one week. 7% of cases had no response. 14% cases had simultaneous amputation along with sympathectomy. 18% cases had delayed amputation due to recurrence of symptoms within next few months. 68% of cases did not need amputation. This study suggests that sympathectomy is an effective management for pain relief, and improvement of patients limb and life. Early detection of Buerger's disease, prevention by abstinence from tobacco and management by sympathectomy is strongly recommended.

INTRODUCTION

Buerger's disease is a peripheral arterial occlusive disease that is becoming rare in Western countries but is more common in Asia. Buerger's disease is an idiopathic, probably autoimmune vasculopathy, panangitis that finally results in stenosis and occlusion of blood vessel (1). It involves the artery from distal to proximal (2). Usually young male cigarette smoker consults with the burning pain of toes (3). Gradually it leads to continuous pain, cold sensation of foot and ultimately the claudicating (4).

As this disease proliferates, if untreated, the opposite limb and sometimes the proximal limb also gets involved (5). Because the vasospasm plays important role in the physiopathology of Buerger's disease and nicotine has vasospastic effect, so smoking cessation helps a lot (6).

As the neurovascular physiology has clearly defined the relationship of sympathetic fibers and sympathetic ganglion in maintaining the vascular tone, the beneficial effects of

sympathetic ablation is well known in relieving the vasospasm. To evaluate the role of sympathectomy in Buerger's disease, embolic disease, Raynaud's phenomenon, causalgia and hyperhidrosis, we carried out this study and investigated the changes in the prevalence and characteristics of Buerger's disease at a major surgical institution in Iran.

SUBJECTS AND METHOD

This retrospective descriptive study was carried out on 100 sympathectomy case records among patients admitted in vascular surgery unit of Poursina and Golsar hospital Rasht during 5 years (1994 - 1999). Buerger's disease was diagnosed on admission according to Shionoya's clinical criteria. Age, gender, clinical data, operation notes and postoperative complications were extracted from the case records of each patient. Data were analyzed with the help of standard health system research methodology and using statistical package for social sciences.

RESULTS

Among 100 sympathectomized patients. 84 % male and 16 % female showed the female to male ratio as 1: 5.25. Age distribution of Buerger’s disease cases as shown in Table no.1, suggests that most of the cases (70 %) were in the age group of 31-45 years.

Figure 1

Table 1: Age and Gender distribution of Buerger’s disease.

Age group	Male		Female		Total	
	N	%	n	%	n	%
< 25 years	0	0	0	0	0	0
26-30	6	6	0	0	6	6
31-35	16	16	4	4	20	20%
36-40	22	22	6	6	28	28%
41-45	24	24	6	6	30	30
46-50	10	10	—	—	10	10%
51-55	2	2	—	—	2	2%
56-60	2	2	—	—	2	2%
> 61 years	2	2	—	—	2	2%
Total	84	84%	16	16%	100	100%

Table 2 shows the organs involved suggesting the lower limb, as the most commonly involved organ. As whole 266 organs were involved in 100 patient and solitary involvement of only upper limb was the rarity (in 8.7 %).

Figure 2

Table 2: Incidence and Prevalence of Organs involved in Buerger’s disease.

Organs involved	Incidence	Prevalence
Upper limb	22	8.3%
Solitary upper limb	2	0.7%
Lower limb	98	36.9%
Only lower limb	78	29.3%
Bilateral Lower Limb	46	17.3%
Upper & Lower limb	20	7.5%
Total Organs involved	266	100%

Table 3 shows various types of sympathectomy in these 100 cases, including right lumbar 51.1 %, left lumbar 33.3 % bilateral lumbar sympathectomy 15.55 %.

Figure 3

Table 3: Incidence of Various Sympathectomies

Type of Sympathectomy	Number	Per cent
Right Lumbar	36	46 %
Left Lumbar	30	30 %
Bilateral Lumbar	14	14 %
Right Cervical	4	4 %
Left Cervical	2	2 %
Bilateral Cervical	0	—
Rt. Cervical Lumbar	2	2 %
Left Cervical Lumbar	2	2 %
Rt. Cervical Left Lumbar	0	—
Left Cervical Rt. Lumbar	0	—

Among cervical sympathectomy, two third were performed on right side and one third on the left side. Bilateral cervical sympathectomy was not done in any case.

65.9 % of Buerger’s disease patients smoked 6-20 cigarettes daily. 31.6 % smoked more than 20 cigarettes. (Table 4).

Figure 4

Table 4: Distribution of Buerger’s disease cases according to number of cigarettes smoked per day

Number of cigarettes/day	Incidence in Burgers cases	Incidence among smokers
1-5	2	2.3 %
6-10	16	18.18 %
11-15	24	27.22 %
16-20	18	20.45 %
21-25	14	15.9 %
26-30	6	6.8 %
31-35	0	0 %
36-40	6	6.8 %
> 41	2	2.3 %
Total	88	100

Among 100 patients 88% (90.9% male and 9.1% female) were cigarette smokers. 12 % (4 male and 8 female) were non-smokers. 86 % of sympathectomized cases showed appropriate response presenting with warmness and flashing of the organ involved, immediately after surgery. 7 % showed late response resulting in pain relief, warmness and flashing of the organ after one week. 7% of cases had no response.

Only one case was complicated with post sympathectomy neuralgia. Four patients had wound infection, which was not specific to sympathectomy. 14% cases had simultaneous amputation along with sympathectomy. 18 % cases had delayed amputation due to recurrence of symptoms within next few months. 68% of cases did not need amputation. Among 32 amputation cases 43.75 % were performed simultaneously and 26.25%, lately; the ratio was 1:1.28. Below knee amputation was needed in 6 cases. Recurrence of symptoms was noticed in 18 % of sympathectomized Buerger’s disease case, which needed late amputation. Among these 18 patients, 16 cases were smoker and 2 patients were non-smoker. All the nonsmokers showed good response to sympathectomy (100 %). Among 7% failure, 6 cases needed late amputation. Among 7% cases of lately responding to sympathectomy, ultimately 2 cases needed delayed amputation (one case of only distal digit of finger another one, only the big toe of foot).

DISCUSSION

Buerger’s disease is a type of vasculopathy, which involves peripheral vessels mostly the lower limbs among young tobacco smokers. Due to multiple remissions and repeated hospitalization this disease costs huge economic burden. As the patients of Buerger’s disease are young, the earning age is disturbed. This causes socioeconomic morbidity for the

family and society too. So, early diagnosis, prevention and management of Buerger's disease has prime importance, Usually males suffer Buerger's disease. In our study 16 % were female. The Japanese study showed 4% female cases⁽⁷⁾. Different studies have suggested 8 % to 20% female patients among Buerger's disease cases. Increasing incidence of Buerger's disease among females might be due to increasing smoking habits in females.

Mean age of Buerger's disease patients at the time of onset in Japanese study⁽⁷⁾ was 36.8 years. Similarly 78% of cases in our study belonged to the age group 31 to 45 years. Another study from Japan published in 1999 including 266 male and 21 female, currently suffering from clinical symptoms showed a mean age of 60 years⁽⁸⁾. 88 % of Buerger's disease in this study was a tobacco smoker and most of the patients smoked 5 to 25 cigarettes daily. Similar study from Hong Kong reported 9 to 23 cigarettes per day smoked by their patients⁽⁹⁾. The same study on 89 patients in Hong Kong reported 62% lower limb involvement; Japanese reported 85% while our study have shown 78% lower limb involvement.

Upper limb involvement in our case was only 2% in comparison to 15% in Japanese patients⁽⁷⁾. Turkish surgeons have studied the hospital records of 216 patients (214 men and 2 women) with Buerger's disease retrospectively. Of these patients 21 had had an arterial revascularization; 183 lumbar and 20 thoracic sympathectomies had been performed⁽¹⁰⁾.

Lumbar sympathectomy resulting in 18% later amputation in our patients was much more successful than lumbar sympathectomy leading to 70% later amputation is Japanese study⁽⁷⁾. German workers have shown 35.8% amputation rate mostly in old age group⁽¹¹⁾. Below knee Amputation in 6.66 % of our case is also comparable with 14.48% below knee amputation in Hong Kong report⁽⁹⁾. The higher incidence of amputation on our cases may be due to continuing cigarette smoking by our patients. Recent Japanese study has also shown the higher amputation rate among current smokers⁽⁸⁾.

CONCLUSION

Epidemiology of Buerger's disease in Guilan population is similar to other parts of the world. Sympathectomy is an effective management for pain relief, and improvement of patients limb and life. By inhibiting the vascular tone, sympathectomy enhances blood flow, cures ischemic ulcers and saves the limb.

Early detection of Buerger's disease, prevention by abstinence from tobacco and management by sympathectomy is strongly suggested to save the limb.

OTHER LINKS

1: Surgery 1998 Sep;124(3):498-502 Related Articles,

Decrease in prevalence of Buerger's disease in Japan.

Matsushita M, Nishikimi N, Sakurai T, Nimura Y

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BACKGROUND: Buerger's disease is a peripheral arterial occlusive disease that is becoming rare in Western countries but is more common in Asia. Whether it is a specific disease entity remains controversial. This study was undertaken to investigate changes in the prevalence and characteristics of Buerger's disease at a major institution in Japan.

METHODS: Patients with Buerger's disease admitted to Nagoya University Hospital between January 1985 and December 1996 were studied retrospectively. Buerger's disease was diagnosed on admission according to Shionoya's clinical criteria. **RESULTS:** A total of 105 patients with Buerger's disease were evaluated on 126 admissions; 58 were new patients who were admitted for initial treatment, and 47 patients were experiencing a worsening of Buerger's disease and had a history of prior treatment. Forty-six new patients were admitted between 1985 and 1989, but only 12 new patients were admitted between 1990 and 1996 (9 +/ 3/ yr vs 2+/ 2/ yr, p = 0.0003). Between 1985 and 1989, 44 patients were admitted because of disease exacerbation, whereas only 24 such admissions occurred between 1990 and 1996 (9+/ 3/ yr vs 3 +/ yr, p = 0.0137). The number of admissions for atherosclerotic peripheral vascular disease did not change significantly in that period. Of the 105 patients, the majority (96%) were men; mean age at the time of disease onset was 36 +/ 8 years. The chief complaint on admission was gangrene/ulcer in 64%, rest pain in 13%, foot claudication in 6%, calf claudication in 6%, and other in 10%. **CONCLUSION:** The prevalence of Buerger's disease appears to be decreasing at our institution in Japan. Its clinical characteristics have not changed. A similar decrease in prevalence appears to have occurred in Western countries.

1: Int Angiol 1999 Mar;18(1):58-64 Related Articles,

Factors affecting the long-term outcome of Buerger's disease (thromboangiitis obliterans).

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BACKGROUND: Although the age at onset in patients with Buerger's disease is relatively young, the life expectancy has been seldom reported in detail. The aim of this study is to study long-term results of Buerger's disease and factors affecting the ultimate outcome. **METHODS:** From 1965 to 1980, 682 patients with Buerger's disease were treated in our outpatient department. We studied their long-term status, including concomitant diseases, and the disease progression by mail. **RESULTS:** Of the 287 mail responders, 266 were male and 21 were female, with a mean age of 60 years. One hundred and fifty-five of these patients are currently suffering from clinical symptoms. Forty-eight patients underwent minor amputation and 30 and major amputation. Forty-six patients underwent sympathectomy, and only 17 bypass reconstruction. Although there was no significant difference in the continuation of symptoms between current smokers and ex-smokers, the amputation rate was higher in current smokers and continuous smoking is closely related to both minor and major amputations after sympathectomy and to minor amputations after drug therapy. Arteriosclerotic diseases were recognized in 57 patients, and gastroduodenal ulcer in 44. Thirty-three patients had died. Among 14 who died of neoplasm, three died of esophageal cancer and lung cancer, respectively, which were closely related to smoking. **CONCLUSIONS:** The natural history of the limbs in patients with Buerger's disease is not completely discouraging, and in order to obtain a favourable outcome for patients with Buerger's disease we recommend complete smoking cessation with drug-therapy and surveillance for neoplasm, especially of the upper gastrointestinal tract and lung.

1: Cardiovasc Surg 1993 Aug;1(4):377-80 Related Articles, Surgical treatment of Buerger's disease: experience with 216 patients.

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Buerger's disease (thromboangiitis obliterans) is a rare peripheral vascular disease that usually affects young male smokers. It is characterized by multiple occlusions distal to the knee and elbow. Although rarely encountered in this

condition, major arterial occlusions can be corrected by arterial revascularization. The hospital records of 216 patients (214 men and 2 women) with Buerger's disease were reviewed retrospectively, 142 (66%) between 1 and 120 (mean(s.d.) 72.8(24)) months after diagnosis. Of these patients 21 had had an arterial revascularization; 183 lumbar and 20 thoracic sympathectomies had been performed. In 30 of the patients a total of 29 minor and four major amputations had been performed. In appropriate cases arterial reconstruction provides better healing of ischaemic lesions. Although vasomotor tone is usually normalized in 2 weeks to 6 months after sympathectomy, the temporary increase in blood flow is often sufficient to heal ischaemic lesions during this period.

1: Vasa 1990;19(1):40-6 [Results of therapy following lumbar sympathectomy.

Aretrospective study over the course of 10 years].

[Article in German]

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In a retrospective study we report about 142 patients who had 159 lumbar sympathectomies from 1975-1985. The angiological status was evaluated with a clinical examination or a questionnaire. In 96% we saw the clinical stages III and IV. The clinic lethality was 3.5%. Besides the sympathectomies 62 reconstructive procedures were necessary which were performed mostly before the sympathectomy. The higher the occlusion resp. stenosis the worse the prognosis after sympathectomy. A postoperative abstinence of smoking improves the prognosis. The amputation rate was 35.8% including minor amputations (n = 20) and loss of the extremity (n = 37). The high number of minor amputations shows that the sympathectomy is an appropriate procedure to shift the amputation to the periphery. The older the patient the higher the amputation rate. The analysis of the clinical examination or the questionnaire shows that a third of the patients has a long-term profit from the sympathectomy.

References

1. Kenneth Oriol; Richard M. Green; Arterial disease: Principles of surgery. 1999; 982 -983.
2. Cooley D.A, Wukeychdone C; Techniques in vascular surgery. W.B. Saunders. Philadelphia, 1994, 208 - 15.
3. Borner C; Heidrich H :Long term follow up of thromboangitis. Vasa. 1998. 27 (2) 80-86.

4. Bojer HJ; Heanming JF. Vanurk, H: et al. Advantage of limited thoracoscopic sympathectomy; Surgery. Endoscopy, 1996, 10 (7) 721-3.
5. Shionoya S; Diagnostic criteria of Buerger's disease. Int. J. cardiol. 1998. Suppl. (3): 243 - 4 .
6. Van Dumne H; Deval L - Greemers E.etal. Thromboangitis obliterans; Acta - chin. Belg, 1997 Oct. 97 (5) 229 - 36.
7. Mashuri Matsushita Naomichi Nishikimi; Tsunehisa sakurai: Decrease in Prevalence of Buerger's disease in Japan: Surgery 1998: 498 - 502.
8. Shigematsu H, Shigematsu K: Factors affecting the long-term outcome of Buerger's disease (thromboangiitis obliterans). Int Angiol 1999 Mar;18(1):58-64
9. Hunglan: Stephen WK cheng: Buerger's disease in Hong Kong. A review of 89 cases Aust. NZ. J. Surgery. 1997 97, 265-269.
10. Sayin A, Bozkurt AK, Tuzun H, Vural FS, Erdog G, Ozer M. Surgical treatment of Buerger's disease: experience with 216 patients. Cardiovasc Surg 1993 Aug;1(4):377-80
11. Schutter FW, Sandmann W, Ashrafnia S: Results of therapy following lumbar sympathectomy A retrospective study over the course of 10 years [Article in German] Vasa 1990;19(1):40-6

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