Causes of Late Mortality in Patients With Disabling Intermittent Claudication

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The long-term prognosis of patients suffering from intermittent ischemic claudication is reportedly worse than that of the normal population. The outcome of patients with ischemic claudication admitted to hospital was reviewed retrospectively to identify the causes of late death. The cumulative survival rates for patients with claudication were 94.6% at 1 year, 79.4% at 3 years, 67.3% at 5 years and 37.4% at 10 years. The 3 major causes of death, that is, ischemic heart disease, malignancy, and cerebrovascular accident, were equally common. The younger patients tended to die of ischemic heart disease, whereas the older patients died of cerebrovascular accidents. Malignancies caused a similar number of late deaths in all age groups. These results suggest that specific care should be given to patients with intermittent claudication based on the age-related causes of death. (Jpn Circ J 2000; 64: 925–927)

Key Words: Arteriosclerosis obliterans; Cerebrovascular accident; Ischemic disabling claudication; Ischemic heart disease; Malignancies

The patency rates of bypass grafts in patients with peripheral vascular disease (PVD) and intermittent ischemic claudication have been reported to be reasonably high. However, the survival rate of these patients is worse compared with individuals without PVD, presumably twice that of the general population.

The most frequent cause of late death in patients with PVD is ischemic heart disease. In contrast, in Japan, the most common cause of death in the general population is malignancy, followed by cerebral vascular disease, and then ischemic heart disease. The present study analyzed the natural history of Japanese patients with PVD and intermittent claudication to identify the cause of late death.

Methods

From 1983 to 1997, 148 patients were admitted to hospital with a complaint of disabling claudication resulting from severe PVD caused by atherosclerosis obliterans. Eight of the patients also had abdominal aortic aneurysms, which required surgery, and so the remaining 140 patients were enrolled in this retrospective analysis. There were 127 men and 13 women whose ages ranged from 43 to 86 years with a mean age of 69±8 years (Fig 1). Of these patients, 116 underwent surgical revascularization (109 bypass surgery, 6 angioplasty, 1 other revascularization procedures) and the other 24 patients were treated medically. Major risk factors included smoking (89.3%) and hypertension (60.7%) (Table 1). Clinical evaluation on admission revealed a history of cerebral vascular accident in 6 cases (4.3%), ischemic heart disease in 20 cases (14.3%) and renal dysfunction in 10 cases (7.1%, serum creatinine level >1.5 mg/dl). In the revascularization group, 3 patients died in hospital (2.6%), one because of intraoperative cerebral bleeding on the 21st postoperative day, another because of bleeding on the third postoperative day and the third because of intestinal gangrene after undergoing surgery to treat an anastomotic pseudoaneurysm on the 16th postoperative day, which occurred 9 years after the first operation. Therefore, data on 137 patients were available for this report. Late events were confirmed at the time of the most recent patient appointment or by telephone interview. Of these 137 patients, 124 (88.6%) were discharged alive.

![Fig 1. Age distribution of patients with intermittent ischemic claudication. Most of the patients were more than 70 years old.](image)

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<thead>
<tr>
<th>Table 1 Major Risk Factors in 140 Patients With PVD</th>
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<tr>
<td>Smoking</td>
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PVD, peripheral vascular disease.
receiving antiplatelet and/or anticoagulant therapy.

Results

The follow-up period ranged from 2 to 161 months with a mean of 50 months. There were 47 late deaths. The mean survival time of these patients was 46 months from the time of first admission. The cause of death was cerebral vascular accident in 9 patients (19%), malignancy in 10 (21%), myocardial infarction in 9 (19%), pneumonia in 5 (11%), malnutrition in 4 (9%), other cardiac diseases in 3, acute renal failure in 1, suicide in 1, and unknown in 5 patients. The overall cumulative survival rate was 94.6% at 1 year, 79.4% at 3 years, 67.3% at 5 years, and 37.4% at 10 years (Fig 2). The cumulative survival rates of the revascularization group and the medical therapy group, respectively, were 96.3% and 90.8% at 1 year, 82.1% and 66.3% at 3 years, and 70.7% and 49.5% at 5 years. The differences were not statistically significant (Kaplan-Meier analysis, p>0.05).

The mean age of the patients who died at the time of their initial presentation was 71.5 years (range, 46–87 years). In contrast, the mean age of the patients who died of myocardial infarction after their initial presentation was 64.8 years (range, 46–87 years). The mean survival time between the first admission and death in those patients was 46 months. The mean age of the patients who died of a cerebrovascular accident was 76.0 years (range, 66–87 years) and the mean survival time in this group was 44 months. The mean age of the patients who died of malignancy was 71.7 years (range, 64–77 years) and their mean survival time was 61 months. The differences between the 3 groups were not statistically significant (ANOVA test, p>0.05, Table 2). The relevancy between age, survival time and cause of death was similar even in the surgical group. Because periodic follow-up was not possible in all cases, the relevancy between the clinical evaluation at the time of hospitalization and prognosis could not be evaluated.

Discussion

Ischemic heart disease is the most frequent cause of late death in patients with PVD in Western countries, followed by malignancy and cerebrovascular events. In contrast, the most common cause of death in Japan is malignancy, followed by cerebral vascular accident and cardiac events. The interesting question is whether the cause of late death in Japanese patients with ischemic claudication reflects what is observed in the general population of Japan. The present study of data from a single institute found that the incidences of malignancy, cerebral vascular accident, and cardiac events were equally common causes of late deaths in patients with ischemic claudication, although the mean age of patients with disabling intermittent claudication in the reports from Western countries is younger than 60 years unlike the patients in the present report.

Our results show that the relatively young patients tended to die of cardiac events, whereas the older patients died mostly of cerebral vascular accidents. Malignancies occurred with equal frequency in the different age groups. The differences between our findings and other Japanese reports may be explained by differences in the age of the study cohorts. Pairolero et al are the only investigators to document that
ischemic heart disease is the most frequent cause of death in younger patients; which suggests that differences in the cause of death may be a function of age, nationality or race. In the present study, the 3 major causes of death occurred with equal frequency because PVD developed mostly in older people. In contrast, in Western countries, PVD occurs in younger patients, in whom ischemic cardiac disease is the most common cause of death.

The advisability of anticoagulant therapy in all patients with claudication is questionable based on our results. Typically, patients with ischemic claudication receive antiplatelet and/or anticoagulant therapy and because 88% of patients in this report were receiving anticoagulant therapy, we are unable to comment on the relevancy of life prognosis and anticoagulant therapy in patients with ischemic claudication. In younger patients, anticoagulation may be beneficial, because it may prevent myocardial infarction, whereas in older patients, although it may reduce the risk of thrombotic stroke, anticoagulation therapy may increase the risk of hemorrhagic events.

The best treatment for patients with intermittent ischemic claudication remains controversial. In the Second Department of Surgery, vascular reconstruction is the treatment of choice, unless the patients has severe ischemic heart disease, end stage renal failure, or is extremely old. Some investigators have argued against surgical intervention, because the amputation rate is low. The in-hospital mortality rate in the revascularization group was 2.6% in the present series. Although differences in the late mortality rate between the revascularization group and the medically treated group could not be determined, the revascularization group showed acceptable results in terms of prognosis.

In conclusion, the major causes of late death in Japanese patients with disabling ischemic claudication caused by PVD were ischemic heart disease, cerebrovascular accident, and malignancy. The younger patients tended to die of cardiac events, whereas older patients were more likely to die of cerebrovascular accidents. Therefore, age-specific therapy must be used to improve mortality in patients with PVD.

References