

Acute Aortic Occlusion: The Need to be Aware

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Summary

A prospective study of patients with acute aortic occlusion (AAO) admitted to the Vascular Unit, Hospital Kuala Lumpur was carried out over a 12 month period. There were a total of 11 patients admitted with a clinical diagnosis of AAO. There was a male preponderance with 10 patients. The median age was 58 years (40 - 70 years). Hypertension was the commonest underlying medical illness (n=7). All patients had painful lower limb paraparesis or paraplegia with bilateral absent limb pulses from the groin downwards on admission to the vascular unit. The majority of patients (10 patients) were referred from other hospitals, of which 6 patients came from outside the Klang Valley. Only eight (8) patients underwent an operative procedure with seven (7) having an initial bilateral balloon catheter thromboembolectomy. There was one (1) aorta-bifemoral bypass after failed embolectomy. An aneurysectomy with inlay-graft was done as the initial procedure in one (1) patient. Mortality was 82% (9/11). The two survivors were in the group that had vascular reconstructive surgery.

Acute aortic occlusion is an uncommon but catastrophic event with a high mortality. Clinicians must have a high index of suspicion in patients who present with painful paresis or paraplegia. Clinical examination of peripheral pulses in these patients is mandatory. Early diagnosis and treatment is important to improve the outcome of this disease.

Key Words: Acute aortic occlusion, Painful paraplegia, Peripheral pulses

Introduction

When a patient presents with paresis or paraplegia of the lower limbs, it is commonly attributed to a neurological cause especially a spinal cord pathology. This however is usually painless. When a patient presents with painful paresis/paraplegia, the diagnosis of acute aortic occlusion must be borne in mind. Lower limb ischaemia results in neuropathy and myonecrosis resulting in paraesthesia and paralysis. Rest pain is a prominent and consistent symptom, though uncommonly painless paraplegia do occur in patients with acute aortic occlusion when spinal cord infarction occurs¹. Mortality in this group of patients is high if no surgical intervention is carried out to relieve the occlusion^{2,3,4}. The aim of this study is to obtain demographic data and referral patterns. The outcome is analysed and recommendations given if possible for improvement in management of these patients.

Materials and Methods

All patients admitted to the Vascular Unit, Hospital Kuala Lumpur between August 1997 to July 1998 with a diagnosis of acute aortic occlusion was entered prospectively into a prepared form. Data collected included demography, clinical history, management and outcome. A diagnosis of AAO was made when the patient presented with sudden onset of bilateral lower acute limb ischaemia and absent pulses from the groin downwards. Majority of the patients also had radiological examination to confirm the diagnosis (n=8). Patients who presented with aortic occlusion but clinically had chronic critical limb ischaemia were not included in this analysis as their clinical outcome and natural history are different.

Results

There were a total of eleven (11) patients admitted to our unit during the one year of study. The demographic data is shown on Table I.

There was a male preponderance with 10 patients and Malays formed the majority (5/11). Many of the referrals were from hospitals outside the Klang Valley. Many of our patients had underlying medical conditions with hypertension, ischaemic heart disease and diabetes mellitus being the commonest (Table II). All the ten male patients had a long history of cigarette smoking. The clinical data is presented in Table III. Mortality was 82% (9/11). All of them had no surgery or only balloon embolectomy. The two patients that survived had reconstructive surgery, one (1) an aorto-bifemoral bypass and the other an aneurysectomy with inlay graft. Many of the patients sought medical attention early with five (5) patients (45%) within less than 6 hours, and another three (3) between six to twelve hours. There were only three (3) patients (27%) who were referred to the vascular unit in less than six (6) hours.

Table I
Demographic Data of Patients Admitted to the Vascular Unit, HKL with a Diagnosis of Acute Aortic Occlusion between August '97 to July '98

Characteristics			
Age:	Median	=	58 years
	IQR	=	56.5 - 61 years
	Range	=	40 - 70 years
Sex:	Male	=	10 pts
	Female	=	1 pts
Ethnic Origin:	Malay	=	5 pts (46%)
	Indian	=	3 pts (27%)
	Chinese	=	3 pts (27%)
Referral	HKL	=	1 pt (9%)
	KV	=	4 pts (36%)
	OKV	=	6 pts (55%)

IQR : Inter-quartile range
HKL : Hospital Kuala Lumpur
KV : Klang Valley
OKV : Outside Klang Valley

Diagnosis was confirmed radiologically in eight (8) patients, five (5) patients with CT scan, two (2) with angiograms and one (1) with colour duplex ultrasound. Three patients were diagnosed clinically as they were too ill to have further investigations. One (1) patient had a confirmed diagnosis of a Stanford Type A dissection of the aorta as a cause of occlusion and two (2) a small thrombosed abdominal aortic aneurysm.

Discussion

Acute aortic occlusion sets in motion a chain of events that threatens life and limb⁵. As with other reports, acute aortic occlusion is associated with a high morbidity and mortality. Mortality rates vary between 35% to 62%^{2,3,4}. The main primary etiology of acute aortic occlusion (AAO) is either embolism or thrombosis. Thrombosis usually occurs in an atherosclerotic aorta. Uncommonly thrombosis of a small infrarenal aortic aneurysm can occur. The thrombotic event can be precipitated by a hypotensive episode, dehydration and uncommonly a hypercoagulable state. A dissection of the aorta can in some cases be the etiological cause of thrombosis. In our series two patients had thrombosis of a small AAA and one a dissection of the aorta. The most common source of an embolus is the heart.

The most common presentation of AAO is the sudden onset of bilateral painful lower limb weakness. Unfortunately because of the clinical picture of paresis/paralysis, clinicians may initially diagnosis it as a

Table II
Underlying Medical Illnesses in Patients with Acute Aortic Occlusion

Medical Condition	No. of Cases
Hypertension	7 (64%)
Diabetes Mellitus	5 (45%)
Ischaemic Heart Disease	5 (45%)
Acute myocardial infarct (previous episode)	2 (18%)
Atrial fibrillation	1 (9%)
Peripheral vascular disease	2 (18%)
Cerebrovascular disease (stroke)	2 (18%)

Table III
Clinical data of patients with Acute Aortic Occlusion admitted
to the Vascular Unit, HKL between August 1997 to July 1998

Case	Age (yrs)	Sex	SM	Medical Illness	Time A (hrs)	Time B (hrs)	Management	Outcome
1.	51	M	Yes	IHD,DM,HPT, AMI, PVD	>24	11	Embolectomy A-Bifem. Bypass	Well
2.	40	M	Yes	HPT,? Ca.Lung	<6	12	Embolectomy	Death
3.	58	M	Yes	HPT, DM	<24	6 - 12	Embolectomy	Death
4.	67	M	Yes	PVD	<24	<6	Aneurysectomy	(R). AKA
5.	58	M	Yes	DM	6 - 12	<24	Embolectomy	Death
6.	61	M	Yes	CCF, DM	1	3	Conservative	Death
7.	61	M	Yes	Liver Disease	<6	<6	Conservative	Death
8.	77	F	No	IHD, HPT, AF	<6	6 - 12	Embolectomy	Death
9.	58	M	Yes	HPT, DM	2	11	Planned fenestration	Death
10.	56	M	Yes	IHD, HPT, CVA, DM, AF	7	18	Embolectomy	Death
11.	60	M	Yes	IHD, HPT,CVA, AMI	6 - 12	6 - 12	Embolectomy	Death

Key:

Sm : Smoking,

Time A : Time from symptoms to 1st hospital,

Time B : Time from 1st hospital to Vascular unit,

IHD : Ischaemic heart disease,

HPT : Hypertension,

DM : Diabetes Mellitus,

CVA : Cerebrovascular accident,

AF : Atrial fibrillation,

AMI : Acute myocardial infarction,

PVD : Peripheral vascular disease

neurological or spinal pathology. This is especially true in our local setting where quite a few of our patients had delayed diagnosis because the first impression was a non-vascular pathology. It is rare for patients to present with painless paraparesis/paraplegia. A complete examination of limb pulses should help one make the diagnosis. Weakness of the lower limbs is due to a combination of ischaemic myopathy and neuropathy. Rarely paralysis is due to spinal cord infarction¹.

Patients at risk of AAO are similar to other arteriopathies with hypertension and diabetes mellitus being common co-morbid medical conditions. Smoking is another important risk factor. In our series all except one patient were heavy smokers. These risk factors also predisposes these patients to coronary heart disease and it has been shown that left ventricular function is an important determinant of survival and outcome⁷. Some of the patients will also have a history of limb claudication⁴.

Obviously with such a high rate of mortality, early diagnosis with quick, appropriate, aggressive management is needed. Once a clinical diagnosis is made, radiological confirmation where possible should be carried out. Angiography was the usual method for diagnosis, but with the introduction of contrast enhanced CT scan, this may be better modality⁸ as it is quicker and in this country more available in the general hospitals. Furthermore CT scan can also reveal any aortic dissections or aneurysms as the cause of occlusion. If there is any doubt, a CT can also diagnose a spinal pathology as the cause of paresis/paraplegia.

The need to decide whether it is an embolus or thrombosis lies in the fact that in cases of saddle embolus, bilateral balloon embolectomy via the groins may be all that is needed to reestablish flow. However, with thrombosis, there is a high chance that a revascularisation procedure may be required as the aorta and iliac vessels are atherosclerotic. To decide whether a

patient has an embolic or thrombotic event can be difficult as many patients have risk factors that can predispose to both. Previously embolism used to be more common but a few authors have noted a change in the pattern of AAO with thrombosis now being more dominant³. In our series, there was only one patient that had atrial fibrillation and we postulated that she may have thrown an embolus. The rest of our patients had risk factors for atherosclerosis and most likely had aortic thrombosis. None of the patients had echocardiogram to look for clots in the heart. The distinction between embolus and thrombosis can be difficult because both group of patients have similar risk profile. Due to the rapid progress of ischaemia, many of our patients are seen by us in a state of advance ischaemia and/or poor medical condition making major surgery difficult or impossible. The only two survivors in our study group had a slower progression or symptoms and ischaemia indicating an underlying chronic disease with formation of collaterals. This slower progress allowed further investigations and more definitive surgery to be carried out with good outcome. This subgroup of patients obviously will do better than the group that has rapid and relentless progress of ischaemia. Conservative therapy with anticoagulation alone is associated with

high mortality. Therefore unless a patient is moribund or the ischaemia is irreversible, surgery should be offered. This was the case in 3 patients who were not offered any surgical intervention except analgesia and anticoagulation. In view of the higher incidence of thrombosis, the sole use of balloon catheter embolectomy as a means of management may not be appropriate, as results are poor. A more aggressive approach with vascular reconstructive surgery is needed. Furthermore a multidisciplinary team approach which includes the medical and anaesthetist must be involve early in the management plan. The need for an intensive care bed is mandatory for post operative care. It is important for clinicians to diagnose cases of AAO early with quick referral to a Vascular Unit for further management if morbidity and mortality rates are to be reduced.

Conclusion

Acute aortic occlusion is a vascular emergency with high mortality rates, requiring rapid diagnosis and management. Examination of peripheral pulses is an important clinical step that will help in the diagnosis when AAO is suspected.

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