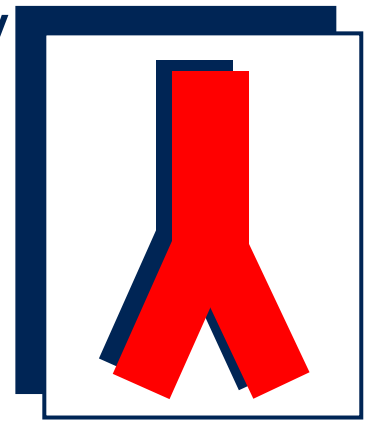


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General practitioner information:

Peripheral vascular disease

Peripheral vascular disease (PVD) is a common problem in General Practice, often there is a lot of uncertainty how to progress the care of such a patient. The truth is many patients with peripheral vascular disease have other often quite significant medical problems and so decision making can be tricky. Fortunately the vast majority of patients can be treated conservatively.

We recognise three basic presentations of PVD:

- Claudication
- Critical ischaemia
- Asymptomatic patients

CLAUDICATION

Claudication is an uncomfortable pain in the leg which comes on during exercise. It is usually located in the muscles because during exercise that's where the oxygen deficiency is. It may affect the calf, thigh or buttock of any distribution of the three. Obviously, the location of the symptoms depends very much on where the vascular disease is most severe. In trying to advise patients about how to progress their treatment for claudication it is important to consider their functional status in parallel with their aspirations and wishes.

We know that more than 70% of patients with intermittent claudication will be absolutely fine without any intervention. The main reason to go ahead with some treatment is that their disability is such that they consider their quality of life unacceptable without intervention. Despite this it may still be appropriate to consider a period of conservative care before launching into invasive treatment.

When considering intervention it is important to balance three things:

- The degree of disability
- The risks of intervention
- The potential benefit of the intervention

It is easy to see how if the risk of intervention is high and the potential benefit low that conservative care may be a better option. The anatomy of the flow restriction is also important; short segments of disease are more rewarding to treat than long segments and treatment of more proximal disease is more likely to produce durable results than more

distal disease. Stenoses are also easier and safer to treat than occlusions. Certain arteries are also unrewarding to treat, the External iliac artery, Common femoral artery and popliteal artery generally respond less well to endovascular treatment than the Common Iliac and superficial femoral arteries.

The proposed treatment is also significant, surgical solutions tend to be higher risk but produce more durable outcomes if done well. In contrast endovascular solutions are often easier and safer but may not be as durable.

When faced with a new patient presenting with exercise induced pain in the leg all these factors have to be borne in mind. The first step is confirming that the problem is indeed due to vascular disease and not back pain, arthritis, foot pain or some other problem. As these problems may co-exist in the same age group, being certain that the pain is due to a vascular problem may be harder than it seems. Objective evidence of vascular disease (loss of pulses or weak pulses) is very helpful. Diagnostic certainty can be improved with doppler investigations or a duplex scan. More invasive scans like MR Angiogram or CT Angiogram should be reserved for patients we are planning to treat.

Once we are certain that at least some of the patient's symptoms are linked to their vascular disease it is important to address lifestyle issues. Cigarette smoking and any other form of nicotine use is associated with progression of vascular disease, failure to benefit from conservative care and may damage attempts to treat the disease. Patients should stop smoking as a matter of some urgency. They should also manage their weight, diabetes and blood pressure diligently. Once this is resolved we can start to consider what to do.

My preference is that all patients will undergo a period of conservative care. This involves a regular exercise program (walking is quite adequate) to try and improve their walking distance. They should walk for about 30 minutes daily. In the beginning they should try not to challenge themselves too much, if they do, they risk becoming disheartened and upset early. Start with a shortish walk in a flat area, ideally a circular walk so they do not get too far from their starting point (so they can get back easily) is good. If the patient works at this diligently they should soon start to notice an improvement in pain free walking distance and a reduction

in the intensity of their pain. In general the benefits of an exercise program are limited if they have not managed to give up smoking as collaterals do not open up until they do. Patients who are patient and diligent with their walking will do well usually, those who become angry or frustrated will often not do as well. During this time it is helpful to reassure the patient and support them. Although many patients will benefit from an exercise program, some just do not, either their demands are too significant or in some they just can't build the distance. This is more common in patients with more proximal occlusions like iliac or aortic occlusions.

CRITICAL LIMB ISCHAEMIA

As the name implies this is a situation where the compromise to a patient's circulation is so critical that limb loss is a risk without intervention. This may present as rest pain, gangrene or an ulcer that will not heal.

Rest pain

This is a situation where there is pain in the foot at all times and this is related to poor blood supply. Often the foot may appear pink and hyperaemic (due to maximal vasodilation). After a little while the dependent foot may go blue. Rest pain is usually experienced in the foot (not in the calf as some suspect). It may be associated by the classical symptom of having to lie with the foot dangling out of bed at night. This improves matters because of the effect of gravity improving the circulation to the foot. It is important to exclude other causes of pain at rest like an injury or gout. Calf pain at rest is also usually something different unless it is due to an acute process.

Gangrene

Gangrene or necrosis of a toe or some area of the foot is usually an advanced sign. In diabetics this may occur as a consequence of an untreated infection and may be very urgent problem. In non-diabetics this is not necessarily the case as infection is often not a major feature. Obviously, they need a prompt referral to manage the problem but in non-diabetics this sometimes has been going on for some time. Restoration of the circulation is required to allow healing of a debridement or minor amputation.

Non healing ulcers

These may take several forms. Again diabetics may represent a very different spectrum of disease where infection may play an important role and require very urgent referral. In a patient with a foot ulcer that is not infected, this may have come about directly as a consequence of the ischaemic process, sometimes an injury is involved. Restoration of the circulation to allow healing is necessary. Sometimes a patient has a leg ulcer brought about by venous insufficiency or stasis which would ordinarily heal but in a patient with compromised circulation just will not get over the line. In some they are unable to tolerate compression bandages which may be critical in getting a leg ulcer to heal, this may be an indication for revascularisation,

but some leg ulcers will still heal with a small amount of compression and in the presence of compromised circulation.

Patients with critical limb ischaemia should be referred promptly as delay can sometimes precipitate a sudden and quite serious worsening of the situation and limb loss is a risk.

ASYMPTOMATIC PATIENTS

We know that the vast majority of patients with peripheral vascular disease will actually be minimally symptomatic or even completely asymptomatic. This is because they have accommodated to their disease well or because the disease is just not very severe. In some their walking may be affected by other problems like dizziness, cardiac issues or shortness of breath. In general these patients do not need a referral or further workup. Patients who have accommodated to their disease should be reassured and supported to continue with their exercise, the infirm should be reassured. Sometimes further investigation may upset patients more than necessary. For example patients whose walking is limited by knee pain or wobbliness may become fixated on a mild amount of vascular disease and believe that treating this will solve all their mobility issues. They can be very disheartened to find this is not the case. Importantly, isolated calf vessels stenosis or occlusion is unlikely to be the cause of substantial reduction in mobility and in any event angioplasty of these lesions is seldom durable lasting not much more than a couple of months. Any improvement in walking distance is usually limited and short term. Ideally this group of patients should be reassured and as far as possible managed conservatively.

COMMON CONFOUNDING PROBLEMS

Nocturnal calf cramps.

This can be a very uncomfortable problem for the sufferer. Sometimes it can be difficult to exclude vascular disease as a cause of this, but many patients with this problem have perfectly normal circulation. It is important not to second guess yourself, if a pulse is palpable their circulation is likely OK. In general too, ischaemic rest pain takes the form of foot pain rather than a calf cramp. In most patient the problem is relieved when they get up for a short walk and a cup of tea. Some tell me that walking on a cold floor is especially helpful. Although some patients worry terribly about lost sleep this is usually not a huge problem as many of these patients are in a phase of life where they do not need that much sleep anyway. Use of traditional treatments like calcium or magnesium supplementation may help in some but is not universally successful. Quinine has also been used for this but has fallen out of favour recently. Some patients find that a small amount of quinine taken as tonic water is helpful. (I suspect the gin that goes with it may also help in other ways).

Swelling

Leg swelling is not traditionally a symptom related to ischaemia. Loss of pulses in a swollen leg may simply be related to difficulty feeling the pulse in a swollen foot. In some cases swelling is caused by a combination of renal or cardiac disease with prolonged dependency. Patients whose mobility is poor will tend to develop swollen legs or feet simply from the gravitational effect of sitting all day and not walking around much. This can be both distressing and very painful. Simple tools such as diuretic therapy, fluid restriction and elevation may help. Some will benefit from a stocking but in this group of patients doffing and donning the stocking may be extremely challenging if not impossible even for a healthy carer. It is important to insist that the patient sleep in a bed (not a recliner chair) for at least 8 hours a night, they should also elevate their legs during the day rather than sit with their legs down. A return to bed for a couple of hours after lunch is also good advice. In a small group of patients previously asymptomatic vascular disease may become symptomatic when their leg swells due to the pressure caused by the oedema. Paradoxically these patients vascular disease may be helped by elevation of the legs.

Back pain

Back pain can be a very difficult problem to exclude. I have seen patients whose iliac occlusion was managed for many years as back pain. One such patient was pretty much wheelchair bound for any trips outside the house. An aorto-bifemoral bypass was extremely liberating for her. Pulse status is obviously a key element of being sure that it is the back causing the problem, but like some other issues many patients will have a bit of both back trouble and vascular disease and it can be tricky to decide which is the dominant problem.

WHY CONSERVATIVE CARE?

This is often a vexing question. It is important to remember that all vascular interventions can be complicated by either death (usually cardiac) or a worsening of the leg symptoms even to the point of leg loss. Although these are rare they are devastating for the patient and particularly more so if the problem was not that severe. In my experience a patient who is committed and successful with an exercise program will enjoy a much more durable solution to their problem without these risks.

In many who progress to a surgical or endovascular solution for their problem a cycle of re-intervention is precipitated which could have been avoided. Often treatment begets further treatment as stents or grafts re-stenose particularly in those who continue to smoke. It is important to remember in addition that the lifestyle change that come with exercise have other benefits. Patients may be anxious to seek a "quick fix" solution to their problem but often this is not the best way forward.

NICOTENE USE

This is an enduring problem for healthcare professionals. Patients who have life or limb threatening disease related to cigarette smoking can find it extremely difficult to give up. They should be encouraged as strongly as possible, and should be supported with therapy, medication and self help groups. Unfortunately, once a vessel has been operated upon, it becomes very sensitive to the damaging effects of cigarette smoke. For this reason many vascular surgeons will not progress with treatment until the patient has given up smoking. How long they have to have given up for (to demonstrate lifelong commitment) is uncertain, but I prefer patients to have been clean for 3 months. This may not always be practical though and a certain sensitivity to the individual patient may be required. It is not appropriate to delay treatment for critical limb ischaemia while patients deal with their smoking habit. The use of e-cigarettes and vaping is not thought to be safe although is widely thought to be less damaging.

Many patients tell me that they "smoke a lot less now than previously". While this is admirable, several things are true. Patients need to give up completely, even small amounts of smoking can dramatically diminish the health benefits of giving up. In claudicants even small amounts of cigarette smoke caused by passive smoking can reduce the improvement normally experienced through exercise! This results in disillusionment for the patient.

I have found that the argument about financial savings made by quitting can be quite compelling.

OTHER LIFESTYLE ISSUES

Nothing is as important as cigarette smoke, but there are other issues that patients can work on that will help as well. Weight is a real problem for some patients, In the same way that no patient who smokes should be allowed to believe that their smoking is not a significant problem, the obese and overweight should be convicted of the health problems that accompany obesity and overweight. In some their weight causes other problems that will limit their walking which if the obesity is addressed improve dramatically. From a claudication perspective simply carrying around 10 to 15 kilograms of excess weight may mean their walking distance is made unacceptable. Sadly the tendency for patients to gain weight when giving up smoking is problematic and may for some be a barrier. We need to consider this with our patients very carefully. Many patients tell me that they are unable to lose weight because they can not walk!. While undoubtedly exercise is a weight management strategy, it is seldom a good weight loss strategy in the middle aged or older patient. Diet control and some times quite severe control will be required.

Weight loss has huge health benefits like better control of diabetes and hypertension. Most patients who have lost weight report a surprising (but not unexpected) new lease of life.

Other lifestyle issues like diet modification to reduce cholesterol and reduction in alcohol intake may not help

claudication specifically but may be part of a program that is helpful for a patient.

MEDICATION

Antiplatelet agents: Patients with objective evidence of vascular disease should be offered an antiplatelet agent to reduce the risk of further heart attack or stroke. Disturbingly the risk added by peripheral vascular disease is greater than that added by known coronary disease. Aspirin at a dose of 75 to 100 mg per day is all that is required. This should be taken with a meal to prevent some of the enteric side effects, but use of a proton pump inhibitor may be needed. Adding or exchanging aspirin to clopidogrel has very limited benefit in prevention and is probably not appropriate unless that patient is allergic or extremely intolerant. The use of enteric coated brands of aspirin may reduce the gastric side effects but add to the cost. Most patients tolerate the low dose of aspirin very well.

Statins: Statins have received a lot of bad press and many patients can be reluctant to take them. Some of this is justified and some not. The role of statins in stroke and myocardial infarct prevention is beyond doubt, all patients at risk should try and take a statin. Although the trials documented a less than 5% intolerance, we know that to be much higher. As many as 20% will get some side effects principally muscle pains with statins. The first thing to clear up, is that it is actually the statin causing the problem. If this is the case you can try a lower dose or a different agent these strategies may not be successful. Using a combination product with ezetimibe may also help. In the truly statin

intolerant using ezetimibe alone may be a solution. I believe the value of statins is significant enough to justify quite a big effort to find a comfortable dose. It is important to monitor liver function during statin use and to check muscular enzymes if cramps appear.

Beta blockers: Although there was a vogue for starting all vascular patients on a beta blocker this is no longer accepted. Many will have a cardiac indication and that is perfectly appropriate. In some claudicants the reduction in cardiac output caused by rate control can limit the improvement in claudication distance achievable with exercise. A balance has to be achieved.

ACE inhibitors: The use of ACE inhibitors for blood pressure control has been shown to have a positive effect but in my view are not indicated in the normotensive vasculopathy. If a patient with PVD is hypertensive use of an ACE inhibitor in preference to other types of anti-hypertensive is probably a good idea.

In my experience very few patients are comfortable with being asked to take additional medications. Many will rail against them. It is our duty to try and "sell" the medications on the basis of their efficacy, however, some patients will be difficult to convince. Some will tell you they are taking the medication but clearly are not (and they are not just forgetting either). There is not much to be done about this, like parenting it is important to maintain the relationship despite recalcitrance because it is important that patients continue to see a GP.