Risk factor assessment and modification by GPs for patients with peripheral arterial disease

James E Coulston, Aisling Roberts, David B Hocken

Abstract

Background: It is well documented that risk factor modification in peripheral arterial disease (PAD) alters the progression of the disease and reduces overall cardiovascular mortality. *Aims:* Treatment for PAD is moving into primary care and the aim of this study was to assess the levels of risk factor assessment and modification currently occurring in primary practice. *Methods:* Forty new referrals to a vascular clinic were identified and their referral letters and assessments in primary care were examined to see whether risk factors had been assessed and whether modifications had been discussed or initiated. These results were compared with national guidelines. *Results:* Of the patients with diabetes 79% had an HbA1c assessed within six months before referral with 25% of results being higher than national guideline standards; 35 patients had hypercholesterolemia but all were taking a statin with an acceptable cholesterol level; 16 patients smoked with only four having been given advice to aid cessation. Only 38% of hypertensive patients had been assessed by primary care preceding referral and only 40% were on sufficient treatment to achieve a 'normal' reading. *Conclusions:* Assessment and modification of risk factors in patients with PAD in primary care is varied and generally poor. This will need addressing if further management of these patients is moved into primary care. *Conflict of interest:* None.

KEY WORDS

Peripheral arterial disease
Risk factor modification
Primary care
Referral to secondary care
Assessment

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The management of peripheral arterial disease (PAD) is a common challenge in both primary and secondary care. PAD is one manifestation of systemic atherosclerotic disease and it is a chronic debilitating condition secondary to obstruction of large peripheral arteries. Treatment revolves around the assessment and treatment of risk factors as well as symptoms. In the majority of cases PAD is treated conservatively, although there is a place for invasive therapies in selected cases (Crane et al, 2003).

Risk factor modification in PAD is well documented to alter the progression of the disease and can help the patient avoid the need for operative revascularisation (Leng et al, 1996). It is also recognised to reduce the overall mortality from myocardial infarction and cerebral vascular accident (Leng et al, 1996; Bendermacher et al, 2005). The presence of peripheral arterial disease alone is sufficient to indicate an increased risk of mortality (Bendermacher et al, 2005; Vogt et al, 1993). Risk factor modification also improves the outcome for patients who go on to require revascularisation procedures (Burns et al, 2003). The most important modifiable risk factors in PAD are smoking, hypertension, diabetes mellitus and dyslipidaemia (specifically hypercholesterolemia) (Burns et al, 2003; Kuiper et al, 2006).

Treatment of PAD is moving into primary care and guidelines from both the Department of Health, the Vascular Surgical Society of Great Britain and Ireland and the World Health Organization specifically mention risk factor modification in patients with peripheral arterial occlusive disease (Vogt et al, 1993; WHO, 1997; NHS QIS, 2003; Lamont et al, 2004).

The aim of this study was to investigate the extent of risk factor assessment and modification that is occurring in primary care before patients are referred to secondary care.

Methods

The study looked at 40 patients who were referred via primary care to a specialist nurse-led vascular surgery clinic. Patients were included in the study if they had both clinical symptoms of PAD and an ankle-brachial pressure index (ABPI) of <0.9. Patients with clinical signs of critical ischaemia or an ABPI <0.5 were excluded.

Data for the study was gained from information provided in the GP's referral letter, direct questioning of the patient and clinical assessment. Referrals were made from 34 different GPs. A standard pro forma was used to collect this data. Information was obtained from these sources on different risk factors for PAD and whether the GP had assessed these factors before referring the patient to secondary care. Information concerning patients' current treatment regimens was gained,

along with answers from the patients themselves, to try and ascertain if appropriate risk factor treatments had been initiated.

The risk factors assessed in this study were cholesterol levels, triglyceride levels, hypertension, smoking, diabetes mellitus and body mass index. Advice about exercise, and the commencement of an anti-platelet drug were also documented. For the purposes of this study, a risk factor was considered to have been assessed if the measurement had been taken within six months before referral.

The 2004 Joint British Societies' Guidelines on Prevention of Cardiovascular Disease in Clinical Practice (JBS2) were used as a gold standard benchmark (British Cardiac Society et al, 2005). The JBS2 guidelines investigate all risk factors for patients with atherosclerosis and cardiovascular disease and use benchmarks or minimum standards for these risk factors, which are listed in *Table 1*. These guidelines were felt to be the most comprehensive review into risk factor modification in atherosclerotic disease especially given the known association between PAD and cardiovascular mortality and morbidity. Collected data was compared with these guidelines to assess treatment provided in primary care.

Results
Demographics
Of the 40 patients, 31 were men and nine were women. The median age was 67.5 years (range=46–88) and the self-reported exercise tolerance varied from 50 yards to 0.5 miles (defined as the distance the patient could walk before the onset of calf pain). Three patients reported episodic rest pain (which could suggest critical ischaemia) but had ABPIs that fell within the reference range for this study. Thirteen patients had coexisting disease due to atherosclerosis, six patients had angina, three patients had previous transient ischaemic events or cerebral vascular accidents, and seven patients had undergone coronary artery bypass grafting.

Table 1

Table 1

Risk factor assessment and modification by GPs

Risk factor	Number of patients (n=40)	Risk factor assessed in primary care	JBS2 gold standard guideline (the minimum standard for risk factor control)	Percentage of patients whose risk factors met the JBS2 guideline
Diabetes mellitus	16	11 (79%)	HbA1c <7.5 %	27%
Hypercholesterolemia	35	31 (94%)	<4 mmol/L	100%
Hypertension	32	12 (38%)	140/80 mmHg	40%
Smoker	12	4 (33%) (advice given)	N/A	N/A
Weight (BMI >25)	25	0 (0%)	BMI <25	37%

Modification (treatment) of risk factors
Table 1 summarises the key findings. There was a vast variation in both risk factors assessed and risk factors modified in primary care. The values given for the number of patients assessed and treated is a percentage of all patients with that specific risk factor.

Diabetes mellitus
Within our study population only three of the 16 patients with diabetes mellitus had type 1 diabetes. Four patients had their diabetes treated with strict dietary control only, eight patients took oral hypoglycaemic agents and four patients regularly used an intramuscular insulin injection regimen to control their diabetes. Only three of the patients tested had HbA1c levels that were under the JBS2 standard audit figure of <7.5 meaning that the risk factor (diabetes) was only sufficiently controlled in these three patients.

Cholesterol and triglycerides
Thirty-four (85%) were on HMG-CoA reductase inhibitor (statin) therapy. All patients, in whom a cholesterol level had been checked by their GP, were found to have a cholesterol level below the JBS2 guidelines of <4mmol/L. All of these patients were on statin therapy.

Sixteen patients (40%) had their serum triglycerides measured in primary care. These patients were all on statin therapy and levels were found acceptable on this therapy (<150 mg/dl).

Hypertension
Sixteen patients were taking anti-hypertensive medication but only 12 had been assessed in the past six months. Twelve patients were on beta-adrenoceptor blocking agents, 13 on angiotensin-converting enzyme inhibitors, seven patients were on a diuretic and five on calcium channel blocking medications. A total of seven patients were on multiple medications for control of their hypertension.

Due to the presence of peripheral vascular disease in our study population, and further atherosclerotic disease in 13 patients, the 'high risk' audit figure (JBS2 guidelines) for hypertension (140/80) was used to compare our study group.

Smoking
Of the 40 patients, 12 were still smoking although four had been offered help to quit. One of those patients was still smoking more than 20 cigarettes per day. Thirteen patients had been smokers and of these, three had been offered counselling by their GP.

Weight and exercise
No patients had their body mass index (BMI) assessed by their GP in the six months before referral. However, five patients had been offered counselling by their GP at some point before referral. Sixty-three percent of patients were found to have a BMI >25 (which indicates that they are overweight) at presentation to the vascular clinic.

Only two patients (5%) had been given any advice or information concerning exercise regimens either as part of a weight loss programme or for symptom control.

Anti-platelet agents

Thirty-three (83%) patients were taking an anti-platelet agent; 72% of these patients were prescribed aspirin and 3% clopidogrel.

Discussion

Risk factor modification for patients with peripheral arterial disease is of key importance to its progression and prognosis. This study shows a massive variation in both the assessment and the attempt to modify risk factors in primary care before the patient is referred to secondary care. It is important to note a connection between cardiovascular disease and peripheral artery disease as risk factor modification is important for both.

It is of great concern that our results have illustrated a poor rate of assessment of hypertension (38%), smoking habits (33%) and weight (0%). The poor rate of acceptable risk factor modification (in comparison to minimum standards listed in national guidance), especially in patients with diabetes is also of great concern. Our results are similar to other study findings looking into treatment in primary care which illustrate that awareness and control of these risk factors is poor (Hirsch et al, 2001; Kuiper et al, 2006).

Smoking, despite being the single most important risk factor for peripheral arterial disease, was poorly treated. Only four patients that were smoking were offered advice or access to counselling. Studies have shown that written or oral advice on smoking cessation may be effective and could be used in this situation (Russell et al, 1979; Gilpin et al, 1993; Burns et al, 2003).

Only 79% of patients with diabetes had HbA1c levels performed within six months of referral and only 25% of these met the JBS2 guidance. Tight glycaemic control is important in peripheral artery disease and patients with diabetes can gain more benefit from medical treatment of cardiovascular disease, however they respond less well to surgical intervention (Burns et al, 2003). Peripheral arterial disease is often more severe and progresses more aggressively in patients with diabetes leading to both micro and macro-vascular complications, therefore regular checks on glycaemic control and adjustment of therapy are essential (Marso et al, 2006).

Cholesterol was the risk factor that was checked in most patients (94%) and treated to an acceptable standard. This may be because of the ease of commencing HMG-CoA reductase inhibitor (statin) therapy. Statins have been shown not only to reduce the risk of death, coronary heart disease and cerebral vascular events but also the need for revascularisation in patients with peripheral vascular disease (Collins et al, 2002).

Results concerning hypertension revealed poor assessment and modification in primary care. Only 38% of patients had their blood pressures checked in the six months before referral and only 40% of patients were on sufficient medication to treat their hypertension. Good hypertensive control is well known to be beneficial when looking at overall atherosclerotic disease but specifically in cerebral vascular and cardiac events (Burns et al, 2003; British Cardiac Society et al, 2005).

Anti-platelet therapy was on the whole used appropriately with 72% of patients taking aspirin and 3% taking the second-line anti-platelet clopidogrel. All patients with peripheral vascular disease should be on anti-platelet therapy, unless there is an absolute contraindication, as evidence indicates that it reduces the risk of serious vascular events and vascular death in patients with peripheral arterial disease (Robless et al, 2001). Weight was the most poorly checked (0%) and treated risk factor. We found that 63% of patients referred to the vascular clinic in this study had a BMI >25. As weight, in addition to waist circumference, is an important risk factor in cardiovascular disease, it should be assessed in all patients presenting with symptoms of peripheral vascular disease (Arterburn et al, 2001). Obesity often co-exists with other atherosclerotic risk factors and its treatment is important for long-term prognosis (Han et al, 1995). Weight reduction in obese patients with peripheral artery disease can also help with symptom control and help should be offered to these patients.

As care for peripheral arterial disease moves further into the field of primary care, improved risk factor modification is important. An awareness of risk factor assessment and modification as well as national guidelines is essential. This may be accomplished by vascular study days, seminars and courses led by vascular physicians and surgeons. Visits to practices by vascular clinical nurse specialists may increase awareness. A further potential to increase risk factor modification would be to implement a payment by results scheme similar to those used in the management of hypertension in primary care. **Wᴜᴋ**

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Key Points

⇒ Risk factor modification is proven to be beneficial in peripheral arterial disease.

⇒ Risk factor modification can alter the progress of symptoms in PAD.

⇒ Risk factor assessment and modification for PAD in primary care was shown in this study to be varied and generally poor.

⇒ National guidelines are available as standards for the treatment of these modifiable risk factors.

DM SYSTEMS