

# Women with angina pectoris receive less antiplatelet treatment than men

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## SUMMARY

*In a study investigating the prevalence of underprescription of platelet therapy for women with angina pectoris, the complete medication histories of patients were examined and indicators of possible comorbidity and comedication were recorded. A higher percentage of women than men were not treated with any form of antithrombotic treatment (37% versus 18%), suggesting a serious, and possibly hazardous, undertreatment with acetylsalicylic acid (ASA) in women compared with men.*

*Keywords: angina pectoris; ischaemic heart disease; acetylsalicylic acid; antiplatelet therapy.*

## Introduction

ISCHAEMIC heart disease (IHD) is the leading cause of mortality in the industrialized countries. The incidence of IHD, especially among women, has been rising gradually in the past 10 years.<sup>1</sup> Despite this, several studies have shown a relative under-use of proven effective medical therapy among older and female patients with IHD, possibly owing to a perceived lower risk of serious cardiovascular events for these patients.<sup>2-6</sup> The underprescription of antiplatelet therapy with acetylsalicylic acid (ASA) in the secondary prevention of IHD could lead to preventable increased morbidity and mortality among women and the elderly. This study investigates the prevalence of antiplatelet treatment in patients diagnosed with angina pectoris.

## Methods

Patients from four separate practices, treated by 28 different general practitioners (GPs), were included. Of the 28 GPs, 13 were female and 14 were active in group practices: this is not unrepresentative for the Netherlands. All 368 patients from practices with participating GPs given multiple nitrate prescriptions in 1996 and/or a code for angina pectoris in the patient database shared by the physician and the pharmacist were included. The

patient's physician confirmed the diagnosis of angina pectoris in 346 (94.0%) cases, and only these patients were included in the study. Complete medication histories of the patients were available and we investigated whether patients were being treated with antiplatelet agents at the end of the inclusion period. Indicators of possible comorbidity and comedication were recorded from the medication histories.

A proportion of patients with angina pectoris received anticoagulants for other indications (e.g. myocardial infarction or atrial fibrillation). In these patients, antiplatelet drugs are not indicated, therefore, these patients were analysed separately. We compared patients not treated with antithrombotics (cases) with those with antiplatelet treatment (controls) in a case-control design. We calculated odds ratios on the association between patients' co-factors and lack of treatment with antiplatelet agents. Multiple logistic regression was used to adjust for possible confounding factors.

## Results

Of 346 patients with a diagnosis of angina pectoris, a total of 66 (19.1%) were treated with anticoagulants (either phenprocoumon or acenocoumarol; six in combination with low dose ASA) and 189 (54.6%) with low dose ASA (30–250 mg per day). A significantly higher percentage of women versus men was not treated with any form of antithrombotic treatment (37.7% versus 18.0%).

Table 1 shows possible co-factors associated with non-treatment with antiplatelet drugs. After adjustment using logistic regression including all factors mentioned in Table 1, female sex remained significantly associated with lack of treatment with antiplatelet agents, resulting in a 2.5-fold increased risk. In a separate analysis we found approximately the same difference in the use of anticoagulants. The lower usage of antiplatelet drugs was not explained by an increased use of anticoagulants.

Presence of diabetes, a risk factor for IHD with a two-fold higher incidence in women, or the presence of asthma or chronic obstructive pulmonary disease (COPD), which could be a contraindication for prescribing ASA, did not influence the results. Cholesterol lowering agents also seemed to be used less frequently by women ( $P = 0.06$ ) (data not shown). There was a trend for a lower use of ASA in the elderly, although not significant after adjustment.

## Discussion

Preventive therapy with 80 mg ASA is included in the Dutch standards of treatment of angina pectoris for all patients. Less extensive treatment of women with IHD has been described frequently in the literature.<sup>2-6</sup> Our results suggest that women receive less prophylactic therapy for angina pectoris compared with men.

The diagnosis of angina pectoris in general practice is subjective. Although GPs confirmed the diagnosis angina pectoris, the severity of the complaints could differ between patients. However, no differences in the use of other anti-anginal drugs; e.g. beta-blocking agents, long-acting nitrates, and calcium channel blockers, were found, indicating comparable severity of disease in patients with and without antiplatelet treatment. The find-

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**Table 1.** Factors associated with non-treatment with antiplatelet therapy in 346 patients diagnosed with angina pectoris.

	All patients (n = 346)	No anti-thrombotics n (%) (n = 91)	Acetylsalicylic acid (ASA) n (%) (n = 189)	Coumarins n (%) (n = 66)	No treatment versus ASA	
					Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Sex						
Male	200 (57.8)	36 (39.6)	125 (66.1)	39 (59.1)	(Reference)	(Reference)
Female	146 (42.2)	55 (60.4)	64 (33.9)	27 (40.9)	3.0 (1.8–5.0) <sup>a</sup>	2.5 (1.4–4.4) <sup>a</sup>
Age						
Less than 59-years-old	68 (19.6)	9 (9.9)	48 (25.4)	11 (16.7)	(Reference)	(Reference)
60–74-years-old	150 (43.4)	37 (40.7)	82 (43.4)	31 (47.0)	2.4 (1.1–5.4) <sup>a</sup>	1.8 (0.8–4.4)
More than 75-years-old	128 (37.0)	45 (49.5)	59 (31.2)	24 (36.4)	4.1 (1.8–9.2) <sup>a</sup>	2.2 (0.9–5.5)
Comorbidity						
Diabetes	52 (15.0)	14 (15.4)	20 (10.6)	18 (27.3)	1.5 (0.7–3.2)	1.6 (0.7–3.5)
Asthma/COPD	35 (10.1)	12 (13.2)	17 (9.0)	6 (9.1)	1.5 (0.7–3.4)	1.7 (0.7–4.1)
Other medication						
Nitrate (rescue)	208 (60.1)	44 (48.4)	117 (61.9)	47 (71.2)	0.6 (0.3–1.0) <sup>a</sup>	0.6 (0.3–1.0) <sup>a</sup>
Nitrate (maintenance)	142 (41.0)	35 (38.5)	77 (40.7)	30 (45.4)	0.9 (0.5–1.5)	0.9 (0.5–1.6)
Beta-blockers	137 (39.6)	31 (34.1)	79 (41.8)	27 (40.9)	0.7 (0.4–1.2)	0.9 (0.5–1.6)
Digoxin	38 (11.0)	5 (5.5)	15 (7.9)	18 (27.3)	0.7 (0.2–1.9)	0.7 (0.2–2.3)
Diuretics	113 (32.7)	28 (30.8)	48 (25.4)	37 (56.1)	1.3 (0.8–2.3)	1.1 (0.5–2.1)
ACE-inhibitors	98 (28.3)	21 (23.1)	42 (22.2)	35 (53.0)	1.0 (0.6–1.9)	0.9 (0.5–1.9)
Calcium channel blockers	138 (39.9)	32 (27.5)	79 (41.8)	27 (40.9)	0.8 (0.5–1.3)	0.9 (0.5–1.5)
Antihyperlipidaemic drugs	101 (29.2)	11 (12.1)	66 (34.9)	24 (36.4)	0.3 (0.1–0.5) <sup>a</sup>	0.4 (0.2–0.8) <sup>a</sup>

<sup>a</sup> Significant effects ( $P < 0.05$ ).

ing that cholesterol lowering agents (also prophylactic agents) seemed to be used less frequently by women, adds to the theory that physicians are less likely to prescribe prophylactic drugs to women with IHD. We thought that female GPs might be more likely to prescribe ASA to women; also, new standards of treatment might be accepted earlier in group practices. However, we found no association with the sex of the GP, or the fact that the GP worked in a group practice, with the prescribing of ASA.

Peptic ulcer disease could be a confounder for our findings. However, Dutch standards do not see peptic ulcer disease as an absolute contraindication for the use of low dose ASA. Furthermore, as the incidence of peptic ulcer disease is higher among men compared with women, this would only strengthen our findings.

Low dose ASA for the prevention of IHD is seldom purchased over the counter in the Netherlands, owing to the fact that this drug is fully reimbursed, making confounding by non-prescription use unlikely.

When patients are diagnosed with angina pectoris and subsequently treated with anti-anginal medication, antiplatelet drugs should also be prescribed. This study suggests a serious, and possibly hazardous, undertreatment with the relatively cheap antiplatelet agent ASA in women with angina pectoris compared with men.

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