

Progression and regression of coronary artery disease in postinfarction patients less than 40 years of age

H. Roskamm, M.D.
P. Sturzenhofecker, M.D.
L. Gornandt, M.D.
H. Gohlke, M.D.
W. Haakshorst, M.D.

Bad Krozingen, West Germany

Our knowledge about progression and regression of coronary artery disease derives from repeated angiography in nonsurgical patients with clinical deterioration and repeated angiography in surgical patients.

This study reports on the course of coronary artery disease (arteriosclerosis) in a nonselected group of patients with a history of myocardial infarction before age 40. These patients underwent coronary angiography a second time 3 years or more after the first examination, independent of clinical course and symptoms.

Patients

Between January 1, 1973 and July 1, 1978, 622 patients with a history of myocardial infarction before age 40 were referred to our hospital. We believe this group to be representative of young patients with myocardial infarction for two reasons:

1. The referring community hospitals had been asked to send all patients younger than age 40 with myocardial infarction.
2. Coronary angiography was recommended to each patient regardless of symptoms.

Of the 622 patients referred, 122 refused to undergo angiography. Five hundred patients had a

first coronary angiogram; 6.6% had normal coronary arteries or <50% luminal narrowing; 56.1% had one-vessel disease; 20.2% showed two-vessel involvement; and 17% had three-vessel disease. One hundred ninety-three patients who had the first coronary angiogram more than 3 years ago were asked to have the study repeated. Thirty-four did not respond; 27 refused a second angiogram; 13 had died; and five were excluded for medical reasons (colon cancer, hepatitis).

The remaining 114 patients underwent a second coronary angiogram an average of 3.8 years after the first, irrespective of the clinical course during this time interval.

Progression or regression of coronary arteriosclerosis was assumed if there was a difference of at least two grades based on the American Heart Association classification of stenosis.

Results

1. In the majority of patients there was no change of coronary morphology (Table 1).
2. Progression occurred with equal frequency in each of the three main vessels. Regression occurred predominantly in the proximal part of the left anterior descending artery (recanalization and reorganization of a thrombus) (Table 2).
3. The group with progression of coronary artery disease showed a tendency for less efficient control of risk factors. (Table 3).

Table 1. Change in severity of coronary angiographic findings		
	n	%
Progression	31	27
No change	64	56
Regression	19	17

Table 2. Change in severity of angiographically determined stenosis in the three main vessels

	n	%
LAD	12	10
	85	75
	17	15
Cx	18	16
	96	84
	0	
RCA	20	17
	90	79
	4	4

(→ = progression,
→ = no change,
↘ = regression).

Regression was found only in those patients who had a single lesion, e.g., in unilocal artery disease.
Progression was found mainly in those patients who had multilocal disease already in the first angiogram.
LAD = left anterior descending artery.
Cx = circumflex artery.
RCA = right coronary artery.

Table 3. Progression and regression of coronary angiographic findings in relation to risk factors

	Progression n = 31		No change and regression n = 83	
	1. angio-gram	2. angio-gram	1. angio-gram	2. angio-gram
Smoking	90%	67%	93%	26%
Cholesterol ↑	87%	83%	87%	50%

Summary

1. Progression is seen mainly in patients with multilocal disease.
2. Regression of coronary artery ste-

nosis is only seen if coronary angiographic findings show a unilocular stenosis, particularly if the proximal part of the left anterior descending artery is affected. We think this is a different disease, thrombosis playing a major role

in the pathogenesis of myocardial infarction.

3. There is a tendency for less efficient control of the risk factors, smoking, and hypercholesterolemia in patients with progression of coronary morphology.