

HEART DISEASE IN PATIENTS UNDER 40

Heart disease starts young

Heart disease starts early in life, however, most patients develop clinical symptoms later in the disease process. The exceptions are young patients who present with heart attacks. A study from Emory University, published in the *Journal of the American College of Cardiology*, involves such exceptions, and provides alarming results of extremely high long-term mortality rates.

Shocking long-term mortality rates

Participants: This study involved 843 patients under 40 years with coronary artery disease diagnosed by angiography from the Emory Cardiac Database between 1975 and 1985.¹ The mean age was 36. Most patients had suffered a prior myocardial infarction (MI), and showed evidence of single vessel disease.

Results: The overall mortality rate for patients in this study was 31% over a 15-year period. Diabetic patients had a mortality rate of 65%.

While this is observational data, this is the largest study that I've seen involving young survivors of acute MI. Not all young patients who experience an MI will undergo angiography, however, this is a U.S. study with a high angiographic rate. Many physicians in Canada, realizing that young patients with a first MI carry a good short-term prognosis, will nevertheless have the patient undergo an angiography as well.

Predictors: The investigators discovered the strongest predictors of long-term mortality were:

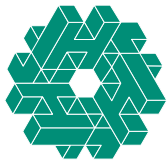
- continued smoking,
- heart failure,
- diabetes, and
- poor left ventricular ejection fraction.

Many of these patients were initially treated with conventional therapies, such as angioplasty, bypass surgery, and medical therapy. Despite the best medical and interventional approaches, long-term outcomes in these initial so-called low-risk patients (young with single-vessel disease) were poor (Table 1).

Dr. Gregory Curnew is assistant clinical professor, McMaster University, staff cardiologist/internist and former director, coronary care unit, Hamilton General Division, Hamilton Health Science Corporation, and a member of our editorial board.



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Physician's Perspective

I was taught that young patients with an acute ischemic syndrome usually have single-vessel disease and an excellent prognosis. The short-term prognosis is indeed excellent, however, it is surprising to learn that at least one third of these young individuals are dead within 15 years. While I cannot prove this, it seems that young patients with heart disease are more prone to plaque rupture, and the burden of disease on angiography may underestimate the severity of atherosclerosis. Extra attention to risk factor modification is crucial. Our conventional approach leaves too many of these vibrant and active individuals dead. Personally, I consider patients who develop heart disease early in life as special, and despite a lack of evidence, I often measure new emerging risk markers, such as:

- lipoprotein (a), a modified form of low density lipoprotein (LDL) cholesterol,
- ultrasensitive C-reactive protein, and
- apolipoproteins.

In young patients experiencing mild disease, the rate of plaque rupture or progression is often much higher. In addition, the value of lifestyle changes, including not smoking, and obtaining an ideal body weight with proper diet and regular exercise, should not be overlooked. Family members should also be screened for known risk factors, such as familial hypercholesterolemia.

♥ Practical Point

In my practice, when evaluating individuals with heart disease, I consider two major factors:

- ♥ **Severity of the disease**
- ♥ **Rate of progression**

Table 1

Emory University Study: 15-Year mortality by subgroup

Subgroup	Mortality
Overall (n = 843)	31%
Prior MI (n = 451)	45%
Diabetes (n = 79)	65%
EF < 30% (n = not reported)	83%

n: Number of people in the subgroup
MI: Myocardial infarction
EF: Ejection fraction

Cole JH, Miller JI, Sperling LS et al.: Long-term followup of coronary artery disease presenting in young adults. J Am Coll Cardiol 2003; 41(4):521-8.

The gene is present in one out of 500 Canadians. Familial combined hyperlipidemia, which is more prevalent, is more difficult to diagnose, as the genetics have not yet been elucidated.

With the mapping of the human genome, newer strategies and markers are under intense investigation. Patients under 40 with early vascular events or patients whose burden of disease is not explained by conventional risk factors, along with their families, should be evaluated in detail and emerging risk factors should be considered for many of these individuals. Expert opinion should be considered in challenging cases. Ideally, all patients and their families should have a total cholesterol, triglyceride, high-density lipoprotein, LDL, and fasting blood sugar measured at least 10 years before a cardiovascular event is experienced by any first-degree relative. These individuals should be watching their families grow, instead, their families are watching loved ones die. ♥

Reference

1. Cole JH, Miller JI, Sperling LS: Long-term follow-up of coronary artery disease presenting in young adults. J Am Coll Cardiol 2003; 41:521-528.