Coronary arteriography in asymptomatic persons

Victor F. Froelicher, M.D.

La Jolla, California

Cardiac catheterization was used to evaluate 298 asymptomatic, apparently healthy aircrewmen with electrocardiographic abnormalities. These men were identified from annual electrocardiograms and exercise tests used to screen for latent heart disease. Data from 27 additional symptomatic aircrewmen who underwent cardiac catheterization because of mild, probable angina pectoris are also included. The men were grouped according to major reason for cardiac catheterization. The order of groups by increasing prevalence of coronary artery disease was as follows: abnormal treadmill test (labile lead only), supraventricular tachycardia, right bundle branch block, left bundle branch block, abnormal treadmill test, ventricular irritability, probable infarct, and angina. Approximately 60% of the men were completely free of angiographic coronary artery disease. The electrocardiographic abnormalities studied have a poorer predictive value for coronary artery disease in asymptomatic apparently healthy men than in a hospital or clinic population.

A mathematical function was developed to predict the probability that an individual has moderate to severe coronary artery disease utilizing appropriate risk indicators.

With step-wise discriminate analysis, the varia-

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Table 1. Variables investigated

Age
Cholesterol
Systolic blood pressure
Diastolic blood pressure
Triglycerides
Log_{10} triglycerides
Smoking history
Family history
ECG history
Cholesterol × age

Table 2. Results with the equation

Sensitivity	53%
Specificity	85%
Predictive value of an abnormal response	64%

bles listed in *Table 1* were investigated as predictors of coronary artery disease to discriminate between the two groups. The product of cholesterol and age was the best single discriminator, followed by systolic blood pressure, smoking history, family history, and log_{10} triglycerides in order, with the preceding variables already in the model. Prevalence was estimated at 40%.

With the multiple-logistic risk model with parameters estimated from the discriminate analysis, the probability of having moderate to severe disease was estimated as:

$$P(D) = \frac{1}{1 + e^{exp}}$$

where:

exp = 10.705 −0.00034417 × (cholxage) −0.029201 × SBP −0.55127 × SMKHIST −0.48436 × FHX −1.1532 × Log_{10} Trig + log_e (1 − p/p)

p = proportion of the patients with disease = .4

Table 2 summarizes how this function discriminated in this population.