

This Week's Citation Classic

Proudfit W L, Shirey E K & Sones F M, Jr. Selective cine coronary arteriography: correlation with clinical findings in 1,000 patients. *Circulation* 33:901-10, 1966. [Depts. Cardiovascular Disease and Pediatric Cardiology and Cardiac Lab., Cleveland Clinic Foundation, Cleveland, OH]

Selective coronary arteriographic findings and clinical diagnoses were correlated in 1,000 patients. Of 300 thought to have no coronary disease clinically, only 17 percent had significant lesions. Almost all who had angina pectoris or myocardial infarction had arterial obstruction. [The **SOI**[®] indicates that this paper has been cited over 285 times since 1966.]

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"Selective coronary arteriography was performed first by Sones in 1959. Sones was cautious about initiating clinical correlative studies, fearing misinterpretation of the arteriograms in early experience with a new technic. By 1961, he and Shirey had accumulated sufficient confidence that they were willing to permit me, whom they considered a clinical skeptic, to start such a study on 1,000 consecutive patients, except one patient was excluded because the left coronary artery was not visualized adequately. Most patients had ventriculography as well. Criteria for clinical and arteriographic diagnosis were developed and have been used with little modification since. Rigid definitions are required if correlations are to be meaningful.

"All patients had been suspected to have coronary disease by at least one physician. Although 300 were thought not to have significant coronary disease prior to catheterization, many of this group were convinced that they suffered from serious conditions, believed to limit life expectancy. Only 17 percent were shown to have significant disease, despite the fact that most were of an age that many physicians considered indicative of almost universal

coronary disease. About one third of the 1,000 patients had no appreciable disease demonstrated, and approximately 60 percent had severe disease. A relatively small number had pain considered to be typical of severe angina pectoris, but no disease was found. Dramatic symptoms tend to occur in conversion neurosis and the text of the submitted manuscript referred to this fact as an explanation for the extreme symptoms in this subset. The editor wished rewording of the sentence in the proofs, so it was changed to, 'The neurotic with conversion obtains secondary gain by having the most severe and disabling symptoms.' The printer changed 'conversion' to 'convulsion' —a wording that must have mystified many.

"If coronary arteriography is a sensitive test, it should be possible to demonstrate severe coronary disease in almost all patients who have typical angina pectoris or myocardial infarction, the two best-defined clinical syndromes. Serious coronary obstructions were shown in 93 and 98 percent of such patients, respectively. Other clinical syndromes caused by coronary disease are less well defined, so correlation with the presence of severe coronary lesions would be expected to be lower, and it was. Later, the distribution of coronary lesions in this same group of 1,000 patients was reported.¹

"This paper may be cited frequently because it confirmed objectively opinions held by many clinicians since the introduction of postmortem injection studies of the coronary arteries. Coronary arteriography is so simple and safe and the results so clear that correlation with defined clinical diagnoses is easy to understand and accept. The earliest beneficial effect was increased caution subsequently in the clinical diagnosis of coronary disease without adequate basis. Finally, it formed a rational foundation for later prognostic studies. The conclusions of this paper have been confirmed in a recent review."²

1. Proudfit W L, Shirey E K & Sones F M. Distribution of arterial lesions demonstrated by selective cinecoronary arteriography. *Circulation* 36:54-62, 1967.
2. Chaitman B R, Bourassa M G, Davis K, Rogen W J, Tyras D H, Berger R, Kennedy J W, Fisher L, Judkins M P, Mock M B & Killip T. Angiographic prevalence of high-risk coronary artery disease in patient subsets (CASS). *Circulation* 64:360-7, 1981.