Pitfalls in the angiographic diagnosis of coronary artery disease

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As we carefully examine selective coronary arteriography in 1977, several things are conspicuous. The value of the procedure as a diagnostic tool is appreciated by increasing numbers of clinicians, cardiologists, and cardiac surgeons each year. This trend partially reflects the availability of adequately trained personnel who have clearly demonstrated that the procedure can be performed with an acceptable risk. The development of improved image intensifiers and other x-ray and photographic equipment has provided better image clarity of large and small structures. Consequently, a better diagnostic standard for defining the coronary artery circulation has evolved.

Although these changes in the past two decades represent progress in evolution, the different disciplines that have produced various standards in technique, selection, and utilization of equipment and experience in interpretation of data have been responsible for misinterpretation of the studies and latent errors. Inexperienced personnel have been a frequent cause of inept performance in catheter manipulation, placement of the catheter tip, selective catheterization, and opacification of the coronary arteries and cardiac chambers, and utilization of

angiographic techniques that provide maximum information. Without adequate supervision, anomalies, variants of normal anatomy, or fixed and functional obstructions may not be recognized; with inadequate contrast visualization of the coronary artery circulation, various patterns of intracoronary and intercoronary collateral channels may not be identified.

Although it is known that the value of selective coronary arteriography as a diagnostic procedure depends heavily on the availability of equipment that will define the morphology of the coronary artery circulation, the inadequate use of x-ray and photographic devices that have the capacity to produce excellent image clarity and high contrast is a frequent cause of unacceptable studies. The potential for error is always present when maximum detail of large and small structures is not provided in the finished radiograph.

Inept performance in cardiac catheterization and photographic techniques, inadequate interpretation of angiographic studies, and insufficient information due to unacceptable x-ray and photographic equipment constitute the main causes for misinformation. This does not imply that the most experienced investigators are exempt from the potential pitfalls in diagnosis. It is the responsibility of all personnel engaged in the performance of cardiac catheterization and selective coronary arteriography to recognize the deficiencies that influence the diagnostic accuracy of this procedure and to institute measures that are necessary to correct them.