EVALUATION FOR SURGERY

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The aim in evaluating patients for surgery in coronary heart disease is to determine their suitability for aortocoronary bypass, resection of a localised aneurysm of the ventricle, repair of mitral valve incompetence or a ventricular septal defect. This paper discusses the techniques used and emphasises their application.

TECHNIQUES

Apart from a thorough clinical documentation and routine laboratory investigation the specialised techniques used depend on the indication and the degree of urgency. For example while detailed studies of ventricular function may be practicable in patients with disabling angina their place is limited in patients with acute myocardial ischaemia or infarction or refractory ventricular arrhythmia.

(a) **Clinical documentation**—This must be detailed both with respect to symptoms, previous and family health, risk factors, response to therapy and physical signs. The advantages of a formal check list suitable for storage, retrieval and analysis is widely appreciated.

(b) **Electrocardiography, chest radiography and blood chemistry**—These are routine but the value of electrocardiography before during and after specific effort testing should be emphasized.

(c) **Coronary arteriography**—Definition of the presence, localisation and severity of lesions and determination of the peripheral run off and collateralisation is fundamental to planning bypass grafting. For example analyses of graft patency indicate that the presence of satisfactory distal run off is essential to satisfactory results. Whether one adopts the Sones or the Judkins technique, cine, large film recording or both is not important provided morbidity is minimal and X-rays of diagnostic quality are obtained.

(d) **Left ventriculography**—This provides information on the dimensions and contraction of the ventricle plus function of the mitral valve details of post-infarction ventricular septal defect and the presence of ventricular aneurysm. Quantitative ventriculography also contributes to studies of ventricular function, vide infra.

(e) **Ventricular function**—Experience has shown that aortocoronary bypass procedures have been associated with an unacceptably high mortality and poor clinical response when undertaken in patients with poor myocardial function. What level of myocardial dysfunction precludes surgery remains under consideration and as a result measurement of ventricular function is invaluable.

This quantitation has been undertaken by various means including ventricular work pressure curves, analysis of intracardiac manometry, quantitative ventriculography, radioactive clearance studies and echocardiographic techniques.

These parameters have also been documented pre, during and after various forms of stress such as exercise, atrial pacing and infusion with isoproterenal.

(f) **Myocardial metabolism**—Coronary sinus catheterisation with studies of extraction of various substrates such as oxygen, lactate and pyruvate have contributed to the evaluation of patients particularly where dissociation appears between the pathological and clinical findings.

(g) **Myocardial blood flow**—Preoperative studies of myocardial blood flow using Xenon or Rubidium clearance techniques have not been helpful in assessment although contributing to our knowledge of coronary heart disease. Intraoperative measurements using electromagnetic flowmeters have proved useful in documenting coronary and graft blood flow, the level of the latter correlating directly with the follow up measurement of graft patency.

DISCUSSION

While the available techniques therefore enable a thorough evaluation of patients being considered for surgery for coronary heart disease, a decision to recommend surgery must be based not only on the investigatory findings but also on a correlation of these findings with the clinical features. The importance of the individual patient's psychological reaction to his coronary heart disease and its influence on the manifestations cannot be overlooked.

Although expediency may dictate limited studies in certain instances, full and complete studies with detailed documentation should be undertaken wherever possible if the true value of surgery in coronary heart disease is to be determined.

CONCLUSION

Current techniques now available for the investigation of patients with coronary heart disease provide adequate data on which to base a recommendation for surgery and to permit evaluation of present operative procedures.

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