CARDIOVASCULAR DISEASE, in particular the atheromatous process, has become the hallmark of, and the predominant cause of death in, affluent, over-fed, underexercised societies. Atheromatous disease, hypertension and the effects of ageing of the arteries can all exist singly or together, so that a high proportion of patients over the age of 40 years presenting for anaesthesia and surgery are more at risk from the effects of these conditions than their normal counterpart. This issue is devoted to consideration of the problems of anaesthesia for patients with arterial disease. Pathophysiology, medical assessment and treatment, and advances in diagnosis and monitoring are considered together with the clinical management of patients with cerebrovascular and coronary arterial disease.

Involvement of the coronary arterial system by the atheromatous process creates the pattern of ischaemic heart disease which is the single most important medical condition which places the patient presenting for anaesthesia at increased risk of perioperative morbidity and mortality. The insidious progress of the atheromatous process is consistent with a normal life pattern free of symptoms until the first appearance of angina, or the catastrophic effects of a myocardial infarct. Thus most of the patients at risk during anaesthesia because of coronary arterial disease present neither history nor symptoms to aid the detection of their condition at assessment before operation. Less than a quarter present with a clear history of angina or of a previous myocardial infarct. There are still insufficient epidemiological studies which accurately identify the risk factors for these patients, and which document the nature and results of morbid events occurring during the perioperative period.

High arterial pressure is not a normal manifestation of coronary artery disease, but where it exists independently it aggravates and accelerates the course of the atheromatous process. Systolic hypertension (> 200 mm Hg) without concomitant diastolic hypertension (< 90 mm Hg) is a common finding in patients with generalized arteriopathy, and represents a state of increased cardiac output into a rigid vascular system. Patients with this response behave very differently from the patients with diastolic hypertension (> 100 mm Hg), the hallmark of renal, endocrine or primary (essential) hypertension. It is equally important to recognize the rigid arteriopath at the assessment before operation because even if the systolic pressure is very high (> 200 mm Hg), no benefit will be achieved by postponing surgery. By contrast, the patient with untreated severe diastolic hypertension (> 110 mm Hg) may well benefit from postponement and medical anti-hypertensive control. The major causes of peri-operative morbidity for the hypertensive patient are coronary and cerebrovascular ischaemia. The former may be secondary to combined hypertension and tachycardia as a result of reflex autonomic responses to noxious stimuli, or when moderate diastolic hypotension decreases coronary perfusion. Cerebrovascular accidents may occur during anaesthesia when the hypertensive patient subjected to undue arterial hypotension develops an ischaemic lesion, or in the period after surgery when severe uncontrolled hypertension may cause an intracerebral haemorrhage.
Improved management of the patient with severe vascular disease depends on progress in the understanding of the pathophysiological basis of the disease process and in the management and assessment of the patient before operation, and not least the application of new and improved monitoring techniques to detect their unpredictable haemodynamic vagaries.

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