A SIMPLE METHOD OF MONITORING THE ARTERIAL BLOOD PRESSURE

Sir,—There is a simple method of directly obtaining the arterial blood pressure with the aid of a radial (or brachial) arterial cannula, and it requires no electronic or other special equipment. But the technique appears not to be widely known. If a small air bubble is trapped in the arterial line (fig. 1) it will oscillate with each heart-beat. The systolic blood pressure can be easily and accurately measured, even when it is unobtainable by auscultation, by inflating the sphygmomanometer cuff until this oscillation ceases. The oscillation is also a reassuring and useful sign during anaesthesia and in other unconscious patients. It is a far more reliable guide to heart action than the electrocardiogram, which may continue to show regular activity when heart action has ceased (Gilston and Resnekov, 1971) and unlike pulse monitors it works even in the most severe low cardiac output state. The bubble must be aspirated before the cannula is flushed to avoid tissue ischaemia from air embolism. This simple manoeuvre, together with central venous cannulation, is particularly worth using in the gravely ill. This is so even if the blood pressure is at first satisfactory, since cannulation becomes more difficult in shock.

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REFERENCE

COOLING DURING VASCULAR SURGERY

It has been generally accepted that heat balance can be assessed by "mixing" values for core temperature and average skin temperature derived from measurement on the skin surface at several sites (Burton and Edholm, 1955). The toe temperature alone does not indicate the average skin temperature, least of all in peripheral vascular disease where obstruction to blood flow limits tissue response to heat gradients. The toe temperatures reported in both groups and in differing ambient temperatures suggest inadequately perfused tissue responding inerically to the environmental temperature.

The early fall in core temperature within 30 minutes of induction of anaesthesia is usually the result of peripheral vasodilatation and may indicate a redistribution of heat content rather than actual heat loss (House and Vale, 1972). This would be evident from the measurement of core and peripheral temperatures at several sites beginning before the induction of anaesthesia. If, as is common at this time, the average skin temperature rose by 2°C when the core temperature fell by 1°C, the body heat content would be substantially unaltered.

It may seem contentious to point out also two errors in quoting from other published reports, but it is important to understand that the methods of heat loss prevention described in different works. Searle (1971) used a water-circulation mattress, not the heat-retaining mattress, and though it is possible to donate heat to the patient with this apparatus, the poor contact between mattress and patient often makes this difficult. Newman (1971) used an electric blanket heated to 40°C under the patient and not a water bed as described in this report. Again contact between patient and heat source is poor, and temperatures as high as 40°C can lead to burning of the skin over a period of several hours.

The heat-retaining mattress has several advantages over the water-circulation mattress and electric blankets, both of which depend on thermostats for safety. Provided the temperature is correct when the patient is placed on the heat-retaining mattress, burning is impossible, and the gel it contains conforms to body contour and thus improves heat flow.

In 9 patients on a heat-retaining mattress during aortic bifurcation graft operations lasting an average of 220 minutes, in an ambient temperature of 21.5°C, core temperature fell by an average of 0.7°C (±0.4), average surface temperature rose by 0.4°C (±1.2), representing a total average heat loss of 24 kcal or an hourly heat loss of 6.6 kcal. This compares with one patient in whom no form of heat loss prevention was used in whom total heat loss was 220 kcal, an hourly loss of 40 kcal. Dr Searle's patient, who was managed on a water-circulation mattress, lost a total of 170 kcal, representing an hourly loss of 21 kcal. In this small series I have found the heat-retaining mattress effective in preventing serious heat loss during vascular surgery.

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REFERENCES