predominance of adenocarcinoma in the studies of cancer pedigrees is emphasized by Schinz and Buschke (1935).

Murphy (1952) compared the incidence of cancer among the female relations of 201 women suffering from cancer of the uterus with that in 215 control families. He concluded that hereditary factors increase the frequency with which cancer appears in the uterus in the relations of uterine cancer cases but does not significantly predispose to cancer in other sites, thus confirming Brøbeck's (1949) findings.

Penrose *et al.* (1948) reached similar conclusions in a comprehensive investigation of the families of 510 cases of breast cancer. They found that breast cancer occurred with significantly increased frequency in the sisters and mothers of the breast-cancer cases. The rate of non-mammary malignant disease in these and other relations was not increased.

In "family N" the age at death is reduced in each generation, the average age at death of those members dying from cancer in each of the three generations so far studied being 76, 54, and 43 years. It should be noted, however, that cancer in the first two generations involved the gastro-intestinal tract, and in the third generation predominantly the uterus. This tendency for each succeeding generation to die from cancer at a progressively early age occurred in Warthin's (1925) "family G."

In many of the previously reported pedigrees, the male members have a tendency to gastro-intestinal tumours, whilst in the females cancer of the uterine body predominates; this occurred in "family N," the only male cancer death being due to carcinoma of the stomach (Case 5), and of the eight female members with cancer five have had primary cancer of the uterus.

Summary

Nine of the 19 members of a family in three generations ("family N") have had 12 confirmed primary cancers. No significant conclusion can be drawn from this observation, since cancer is bound to occur with exceptional frequency in a certain number of families simply because of its high incidence in the general population. It would, however, appear likely that a genetic influence in this family predisposes to uterine and gastro-intestinal cancer.

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The British Standards Institution announces the publication of two British Standards for sphygmomanometers. They relate to the mercury and to the aneroid type respectively. The standards were prepared on the basis of the joint experience of manufacturers and of the medical profession in relation to the factors leading to general technical efficiency. Provision is made for quality of materials and certain design features. British Standards 2743 and 2744 may be obtained from the Sales Branch of the British Standards Institution, 2, Park Street, W.1, price 3s.

TRENDELENBURG TILT AN OBSOLETE POSITION

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The Trendelenburg position, providing steep head-down inclination of the anaesthetized patient, was originally devised to assist the surgeon working in the pelvis; this it did by maintaining the small bowel within the upper abdomen through the aid of gravity. This extreme position came into use as a necessary aid at a time when anaesthesia produced a degree of relaxation less perfect than can now be achieved as a result of the introduction of relaxing agents, and when the nature of the patient's breathing in the deeper planes of anaesthesia was often jerky and rapid. To-day with the aid of relaxants and balanced anaesthesia it has become possible to prevent the encroachment of the upper abdominal contents upon the pelvic fields without moving the patient from the horizontal position; in most cases two abdominal packs are all that are required to hold back those viscera with mesenteric attachment. Nevertheless, Trendelenburg's position is still popular in gynaecological, urological, and proctological practice.

FIG. 1.—A vertical radiograph and outline drawing of the pelvis with the patient lying horizontally.

FIG. 2.—A vertical radiograph and outline drawing of the same patient in 30 degrees of Trendelenburg tilt, revealing the narrow angle of vision into the pelvis and the degree to which the symphysis pubis obscures the sacrum and the pelvic viscera which must lie in front of it.

Apart from the question of encroachment of viscera it is commonly thought that better access to the pelvic cavity can be gained when the patient's head is lower than the pelvis itself. In fact, the reverse is true, for the more the patient's head is lowered in relation to the pelvis the further does the symphysis pubis move over to obscure the contents thereof (Figs. 1 and 2). In order to obtain direct vision the surgeon standing on the patient's left must then incline to his right, a tiring position to maintain for long periods. When the patient is horizontal direct vision into the pelvis can be gained, as is normally achieved for other approaches within the abdomen, by both surgeon and assistants without their recourse to bodily contortion. Nevertheless the stance and viewpoint which result from the Trendelenburg position are used routinely by the majority of pelvic surgeons, who are, indeed, conditioned to its use by their training.

Surgical access has been the prime consideration in using steep Trendelenburg tilt, but in fact such access is in most cases made more difficult by the tilt imparted to the pelvis and the inclination from vertical of the line of vision. There is therefore a surgical reason for abandoning the steep Trendelenburg position; from the anaesthetist's point of view there are more cogent reasons why such head-down tilt should be discontinued.

Disadvantages of the Tilt

Embarrassment of Respiration.—Impairment of tidal exchange with consequent reduction in minute ventilation results in inadequate expansion of the lungs—particularly the lower lobes. Such impairment may result from depressed respiration with high relaxant dosage or from "diaphragmatic splinting," when the whole of the weight of the abdominal contents lies heavily upon the under surface of the diaphragm in the Trendelenburg position. In this position the partially curarized diaphragm has to make its "descent" against the force of gravity and the weight of the abdominal viscera together with the abdominal packs used to contain them. Controlled breathing will overcome this difficulty, but it is doubtful whether it is advisable or indeed justifiable to employ controlled respiration upon all cases of this type.

Vasomotor Failure.—Vasomotor tone may become depressed during operation. Under normal conditions, with the patient horizontal, this will become manifest as a fall in blood pressure in the presence of a steady pulse rate (Inglis, 1952). When head-down tilt is adopted this type of vasomotor collapse is masked and no fall in blood pressure may be seen. In the absence of an increased pulse rate there may be no other indication of collapse until the horizontal position is resumed; a marked and dangerous fall in blood pressure may then become manifest at a time when the operation has been completed.

Venous Return.—The venous return from the lower limbs and abdomen is assisted when the Trendelenburg position is adopted. Where right-sided cardiac function is impaired the increased venous inflow can result in congestion and embarrassment of heart action.

Cerebral Circulation.—Owing in part to the same mechanism and in part to the reversal of the normal gravitational pull, the venous return from the head will be slowed down. Thus the cerebral circulation may stagnate, with an increased tendency to cerebral thrombosis.

Gastric Regurgitation.—Regurgitation of stomach contents is a very real danger, especially in emergency cases. A cuffed endotracheal tube with free drainage from the pharynx is an essential safety factor whenever the Trendelenburg position is used; without this, aspiration of gastric contents becomes a real danger with flooding of the chest when the horizontal is resumed. Respiratory secretions may also gravitate down the endotracheal tube and repeated suction become necessary.

Nerve Palsies.—Of recent years many instances of brachial plexus palsies following the use of arm-boards on anaesthetized patients have occurred. Such palsies are more prone to occur when arm-boards are used in conjunction with Trendelenburg tilt, since the force of gravity tends to increase the angle of abduction of the arm. Shoulder-rests can, if incorrectly placed, result in plexus damage from pressure in the supraclavicular fossa; indeed, elaborate and expensive devices have been described to obviate this.

Conclusions

From the anaesthetic aspect no advantages accrue from the routine use of the Trendelenburg position. It is of value as an emergency measure in collapse or in sudden vomiting; as a routine it may add to the dangers and difficulties of anaesthesia. Steep Trendelenburg position is not essential for operating within the pelvis, and its use is for the most part a relic of difficulties experienced in the past; nevertheless it continues to be employed largely as a matter of custom. With modern relaxants operative approach to the pelvis is facilitated, and the patient may be kept horizontal, a posture which invokes fewer complications than the Trendelenburg position and permits more direct vision into the pelvis.

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