

BOUCHET, NADIA DU AND LEBRIGAND, JEAN: *Anesthesia and Pre- and Post-operative Management of the Inferior Vena Cava Ligation in Decompensated Cardiacs*. La Semaine des Hôpitaux de Paris. Vol. 28, No. 13, Feb. 18, 1952.

"The physiological effects of this operation (ligature below the junction of renal and inferior vena veins) are discussed, especially the increased cardiac minute volume and the reduced auricular pressure.

"In left ventricular failure, as well as in cases of mitral stenosis, that are amenable to medical treatment, the operation is not very beneficial. Right ventricular output and pulmonary hypertension are reduced, but the peripheral resistance is increased and adds to the cardiac work load.

"In right ventricular failure (either primary or following leftsided failure), on the other hand, the effects are beneficial. The venous return is reduced after ligation and soon the minute volume increases, and the pulmonary arterial pressure falls to normal levels with considerable relief of dyspnea, orthopnea and cyanosis.

"This, however, does not apply to far advanced cardiac decompensation, where the sudden shift in the cardiac load might be poorly tolerated. These patients might do better with a two-stage procedure: Bilateral femoral vein ligation will give some preliminary relief and gradually reduce the venous return. Inferior vena ligation can then be performed as a second stage procedure.

"Neither does the sudden pulmonary edema of arterial heart disease which occurs without right ventricular failure respond to vena cava ligation. On the contrary, the improved minute volume might precipitate further attacks.

"The repeated occurrence of pulmonary embolism in decompensated cardiacs is an absolute indication for in-

ferior vena cava ligation, whereas cardiac thrombosis is considered a contraindication, even though the diagnosis of this condition is most difficult.

"Ligation of the inferior vena cava may be compared to a "bloodless" blood letting. The anesthesiologist is faced with the problems of maintaining oxygenation in the presence of decreased cardiac minute volume, impaired alveolar gas exchange (especially with pulmonary edema) and pooling of blood in dependent parts; noxious reflexes, unphysiological position and hemorrhage may cause serious trouble. Intravenous fluid and blood replacement may overload an already failing heart.

"Seventy-five patients have undergone ligation of the inferior vena cava. Three of them were carried under general anesthesia (cyclopropane, and curare 1% Pentothal and ether, respectively), 6 under paravertebral, 1 under epidural block, 40 under paravertebral block with 1% Pentothal or morphine intravenously, 25 under subarachnoid block.

"The authors soon abandoned general anesthesia; too many serious drops in blood pressure, excessive bronchial secretions and cyanosis were encountered, despite a premedication that included atropine or scopolamine.

"Paravertebral block is very satisfactory, but time consuming and frequently complicated by retroperitoneal hematoma.

"Following Sarnoff's work, the authors finally used spinal anesthesia. The reduction of the peripheral vascular resistance and the reduction of the circulating blood volume due to peripheral pooling greatly reduced the cardiac work load and increased the minute volume. The oxygen need of the paralyzed areas is reduced and more oxygen is available for the heart muscle.

"Cyanosis, dyspnea and orthopnea disappear after spinal block, the improved muscular relaxation shortens the operating time and reduces the often severe operative blood loss. In addition, it serves as a therapeutic test—if no relief is obtained from the spinal block, vena cava ligation is contraindicated. Femoral vein ligation is then performed as a first stage and may be followed by vena cava inferior ligation at a later date.

"The most frequent complications are:

- (a) Cardiac arrest on the table (2 cases) or postoperatively (3 cases). It is essential to be prepared for such an emergency (procaine, cardiac massage) before the beginning of the anesthesia.
- (b) Postoperative acute cardiac insufficiency (2 cases), where a two-stage procedure would have been more prudent. Oxygen and medical treatment are recommended.
- (c) Renal failure may be anticipated in those cardiacs where a damaged kidney might have preceded († caused, E. G. B.) the arterial disease and the cardiac failure. One case of anuria and consecutive uremia is reported.
- (d) Pulmonary emboli may occur from a vena cava already thrombosed above the site of the ligation, or from a thrombosis of the upper extremities.
- (e) There was one peripheral embolus from the left auricle.
- (f) Acute pulmonary edema (4 patients with arteriosclerotic heart disease, 1 with mitral stenosis), especially serious where patients had edema and left failure. These patients, too, are benefited by a two-stage procedure.
- (g) Shock is especially bad in view of a low minute volume and the

danger of overloading the circulation with intravenous infusions and transfusions. Vaso-pressor drugs (Neosyneprine) are recommended.

- (h) Hemorrhage, especially after paravertebral block, where slowly oozing blood might cause serious anemia and hypoproteinemia.
- (i) Finally, thrombosis below the level of ligation, better prevented by early ambulation than by anticoagulants.

"Preoperative measures include bed rest, digitalis (if fibrillating), mercurial diuretics, penicillin and oxygen (tent) for 24 hours.

"Postoperative measures: Oxygen from the operating to the recovery room, low chloride intake, fluids by mouth and morphine, early passive movement, followed by active exercise, whenever the cardiac status allows."

E. G. B.

TILKIN, LEONARD: *Medical Contraindications to the Use of Sodium Pentothal for Narcosynthesis*. Dis. Nerv. System 12: 57-61 (Feb.) 1951.

"Despite some reports of the use of sodium pentothal in the presence of previously accepted contraindications, the general attitude is to accept the following conditions as definite contraindications: marked hypotension or hypertension, coronary disease, cardiac decompensation, myocardial damage, hepatic damage, respiratory obstruction of any type, and any gross abnormality of metabolic activity or other factors that would be generally debilitating to the patients physical condition. Thus projecting the above information to the psychiatric use of sodium pentothal for narcosynthesis, we have accepted the same conditions as contraindications. In a series of 400 interviews with 125 individuals, the breakdown of