

must be publicized and used in daily practice. 4 references.

F. A. M.

NICHOLSON, M. J., AND EVERSOLE, U.
 II.: *Neurologic Complications of Spinal Anesthesia*. J.A.M.A. **132**: 679-685 (Nov. 23) 1946.

Some neurologic complications follow spinal anesthesia while others are more frequent after general anesthesia. Headache, septic and aseptic meningitis, arachnoiditis, neuritis, myelitis and the cauda equina syndrome have been the complications most frequently reported following spinal anesthesia. The cauda equina syndrome is usually brought to the anesthesiologist's attention when the patient fails to regain the use of his lower extremities at the usual time after spinal anesthesia. Loss of motor and sensory function is usually found to involve the lumbosacral nerve distribution. Loss of bladder and bowel function is the most ominous part of the clinical picture and return of function, if it occurs, is slow.

The cause of each of the neurologic complications which follow spinal anesthesia in man is difficult to determine. When the cat or dog is the subject of experiments, there seems to be little doubt that the toxicity lies within the spinal anesthetic agent itself.

The clinical manifestations of the lesion of the cauda equina might be explained by damage to the lumbosacral region of the cord, to the conus medullaris or to the nerves of the cauda equina. In most cases the damage has occurred immediately following the operation under spinal anesthesia. Direct trauma seems unlikely as the sole cause of the damage. There seems to be a definite relationship, however, between the traumatic spinal puncture which causes pain to radiate down the leg and which is combined with the injection of a spinal anes-

thetic drug, and a permanent neurologic complication. The rapid onset of symptoms, lack of symptoms or signs of an inflammatory process, and failure to culture organisms from the spinal fluid in these cases seem to preclude infection as the etiologic factor. In animals the nerves exposed to the greatest concentration of the anesthetic drug are most affected. Another possibility in the etiology of these complications is that the spinal anesthetic may act as a precipitating factor in the evolution of preexisting neurologic affections such as, pernicious anemia with combined sclerosis, multiple sclerosis, tabes, general paresis, toxic psychosis, metastatic carcinoma with impending spinal fluid blockage.

Reports from the literature show a great variation in the incidence of these complications. Thirteen cases in which neurologic complications followed spinal anesthesia have been obtained from the records of the Lahey Clinic and from records of other sources outside the Lahey Clinic.

To prevent postspinal neurologic complications the apparatus used in the administration of spinal anesthesia should be carefully cleaned and sterilized. Rinsing of syringes and needles with sterile isotonic solution of sodium chloride is an additional precaution. Drugs should be used from manufacturers' ampules. The labels should be legible, the contents clear and free from particles and the ampules should be intact. Ampules should be sterilized by immersing in a non-irritating, colored solution such as 1 to 1,000 Zephiran. Spinal puncture should not be made through or near infected areas. Spinal anesthesia should not be given to patients with known spinal cord disease or with known virus infections. Delayed return of motor function or severe paresthesias following a previous spinal anesthetic should be considered a contraindication to spinal anesthesia.

If radiating pain follows spinal puncture the needle should be moved before injecting the drug. Persistent bloody tap contraindicates injection of the spinal anesthetic drug. When a desired height of anesthesia has been difficult or impossible to obtain a spinal block should be suspected. Residual anesthetic solution should be removed at the termination of such anesthesia by irrigating the subarachnoid space with isotonic solution of sodium chloride.

Spinal fluid dynamics should be carried out when the patient complains of intractable back pain or pain which seems out of proportion to the circumstances of his condition. When the complication results the degree of nerve involvement as well as factors which might be responsible should be determined. Tidal irrigation of the bladder and effective enemas should be administered. Spinal fluid dynamics should be determined, residual anesthetic removed by irrigation, spinal punctures, repeated daily when indicated, and careful nursing should be included in the care of these patients. The recovery period is variable. 39 references.

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THORLAKSON, P. H. T.: *The Surgeon-Anaesthetist Relationship. Canad. M. A. J.* 55: 489-493 (Nov.) 1946.

The surgeon has, in the past, adopted the attitude that he alone assumed the responsibility for the patient and that every phase of the operative procedure, including the anesthesia, were under his direction. The anesthetist was expected to assume responsibility only when the patient failed to survive the operation. Such a state of affairs could not continue indefinitely. With a change in the anesthetist's functions he now assumes new responsibilities. The new agents and methods make familiarity with the advances in anesthesia essential to the practice of an-

esthesia. The anesthetist has in recent years assumed his rightful place as a member of the surgical team. Emphasis should be placed on the capabilities of the anesthetist when discussing the coming operation with the patient. The anesthetist is much more important than the agent. Careful preparation and discussion with the anesthetist as well as the internist results in the arrival of the patient in the operating room in a better physical and psychological state. Much of the credit for advances in surgery during the past 20 years must be given to the anesthetist. Where mutual respect and harmony exist between the surgeon and the anesthetist much can still be achieved in reducing what has been considered the irreducible degree of failure which mars surgical records.

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GOLDMAN, VICTOR: *The Place of the Anaesthetist in the Surgical Team.* M. Press 216: 459-461 (Dec. 18) 1946.

The anesthetist acts as a trustee to safeguard the patient's interests before, during and after the operation. The anesthetist should have well-defined duties. He should see that the patient is in as fit a condition as possible and that his outlook is a cheerful one. In cardiac cases the anesthetist should be able to evaluate the risk and recommend the safest anesthetic. In thoracic surgery, where the surgeon invades the anesthetist's territory, the anesthetist comes into his own.

In choosing the anesthetic the patient's wishes, the surgeon's preferences, the anesthetist's skill and the safety of the patient should be considered. The anesthetist must maintain the anesthetic equipment in perfect order and have it ready for use. Diagnostic lumbar puncture, oxygen therapy, blood transfusion service and