

CASE REPORTS**Permanent Nerve Block with the Aid of
an Image Intensifier**

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When neurolytic solutions are injected to produce permanent nerve block, exact location of the tip of the injecting needle is critical. The needle must be placed in or very close to the nerve concerned to produce a satisfactory therapeutic effect and to prevent necrosis of neighboring tissues leading to scar formation and neuralgia. In some situations radiological control will facilitate accurate introduction of the needle.¹ The advent of image intensifiers suggests the possibility of even better radiologic control. An image intensifier was invaluable when positioning the needle for paravertebral cervical-nerve alcohol block in the following cases:

CASE REPORTS

Case 1. A 54-year-old man complained of severe pain in the left side of the neck, for which he received morphine, 8 mg., intramuscularly every three hours. The pain, which had been present for several months since a bilateral neck dissection and total laryngectomy for carcinoma of the larynx, was in the distribution of C3. Attempted percutaneous cordotomy was abandoned because the patient could not be positioned due to pain. Paravertebral alcohol block was considered. A lateral approach was not feasible because of the presence of scar tissue and induration. The only bony landmarks which could be palpated definitely were the lower three cervical spinous processes. Using a Philips Electronics Instrument BV205 Portable Image Intensifier, a paravertebral alcohol block of the left third cervical nerve was performed via a posterior approach.² The patient was placed in a sitting position with the neck flexed. A 22-gauge needle was introduced and repositioned until the left transverse process of the third cervical vertebra was contacted and later bypassed laterally. Paresthesia was elicited and a solution of 35 mg. procaine crystals in 1.5 ml. absolute alcohol was injected.

On the following day the patient was still experiencing considerable pain, but after three days, until his death two weeks later, we was pain-free in this area. Death was due to hemorrhage from the left carotid artery which was encased in tumor and had become exposed.

Case 2. A 22-year-old man complained of incapacitating pain in the right upper medial area of the scapula and right upper arm. The pain had been fairly well controlled for the previous two months with codeine, 65 mg., three or four times daily and meperidine, 50 mg., with secobarbital, 100 mg., at night. The pain, which was in the distribution of C5, suddenly became much worse, necessitating the use of a two-weeks' supply of medications in two days. A year before, the patient had undergone exploration of a large neurosarcoma which encompassed the lower roots and trunks of the right brachial plexus. The tumor was traced into the spinal canal and consequently could not be excised. Radiotherapy diminished the size of the mass. The right arm gradually became completely paralyzed.

A block of C5 on the right was performed with 1 ml. absolute alcohol, using a technique similar to that employed in Case 1. The image intensifier was used to facilitate positioning of the needle, and paresthesia was elicited. Pain in the back and upper arm disappeared for half an hour and then returned. Two days later, the pain completely disappeared and all narcotics were discontinued. The patient then began to complain of a burning pain in the hand; a week later an alcohol block of C6 was performed, again using the image intensifier. X-rays taken during this procedure are shown in figures 1 and 2. This resulted in a gradual diminution in pain in the hand during the ensuing four days. At the time of this report the patient had been pain-free for five weeks.

DISCUSSION

By moving the beam of the image intensifier up and down the cervical spine, the individual cervical vertebra and the level of the needle were identified. This was best done in the lateral projection (fig. 1). The anteroposterior view (fig. 2) was most useful in deflecting the

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FIG. 1. X-ray showing introduction of needle at level of C6 (lateral view).



FIG. 2. X-ray showing needle tip at lateral aspect of transverse process (anteroposterior view).

tip of the needle laterally to bypass the transverse process, to perform the paravertebral cervical blocks. An image intensifier could also be used advantageously to block nerves in other areas which are anatomically related to bony landmarks. Alternative methods of radiological control are more time-consuming and less convenient. The degree of definition with currently available equipment permits clear visualization of the area concerned. The

image is displayed on a cathode-ray tube remote from the patient and eliminates the danger of x-ray exposure for the operator.

REFERENCES

1. Bonica, J. J.: *The Management of Pain*. Philadelphia, Lea and Febiger, 1953, p. 229.
2. Labat, G.: *Regional Anesthesia. Its Technic and Clinical Application*. Philadelphia, W. B. Saunders, 1924, p. 172.