Comments on the Use of Intraspinal Phenol-Pantopaque for Relief of Pain and Spasticity

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The highly successful use of intraspinal injections of phenol dissolved in iodo-phenylundecylate* for the relief of pain and spasticity has been reported in the English literature. We were encouraged by these results and elected to use this agent in selected cases. Our series is small in comparison with those reported by Maher, Nathan, and Brown but we felt it worth while to report our observations since they differ considerably from the above authors. Brown reported 80 per cent of his patients with pain caused by neoplasm were relieved completely of their pain after phenol-glycerine injections, and only 26 of 46 patients with pain produced by non-neoplastic conditions failed to respond. Our experience with either category is much less encouraging. As a result of this clinical study, we have reproduced the procedure in the laboratory, using cats, and in a subsequent report will offer a possible explanation for the clinical phenomena observed.

Material and Methods

A total of 60 phenol-Pantopaque injections were performed in 30 patients. The injections for spastic paraplegia and for pain in the pelvis and lower limbs were made into the subarachnoid space; injections for high dorsal and cervical pain were made epidurally or subdurally. All injections were controlled radiologically and in all instances the procedure was continued until there was radiographic evidence that all roots that might be innervating painful or spastic areas were covered with dye. A minimum of four and an average of at least six roots were thus treated on one side at each session. The procedure used is that as described by Maher and the material was prepared by dissolving phenol crystals in Pantopaque in strengths of 1:5, 1:10, 1:15, and 1:20. Pre- and postinjection neurological examinations were performed on all patients. Results as to relief of pain were evaluated by questioning the patient, his or her family, the floor nurses, when possible the referring physicians, and especially by noting the amount of medication the patient required before and after injection. Results were considered excellent when all pain was relieved for a prolonged period, good when the patient no longer required narcotic for relief, fair when relief was partial, and poor when relief was nil or lasted but for a brief period of time. We have grouped our patients into three categories—somatic pain, pain of visceral or sympathetic origin, and spasticity.

Results with Somatic Pain

Concentrated (1:10) solutions of phenol-Pantopaque were used only in patients with malignancy in whom life expectancy was considered brief and who already were hopelessly bedridden. Exceptions to this were 3 patients with a good life expectancy in whom pain was limited entirely to the “saddle area” and who already had colostomy and “ileal conduit” urinary diversions. Nine patients were treated with the 1:10 solution. A good result was obtained twice, a fair result 3 times, and a poor result in 3 instances. One injection was considered indeterminate as the patient expired 3 days after injection.

One of the poor results with 1:10 phenol occurred in a female with carcinoma of the cervix who 2 years previously had obtained excellent relief of perineal pain with a subarachnoid injection of alcohol. As her malig-
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nancy progressed, pain recurred in the perineum. She was injected with 1:10 phenol and on this occasion relief lasted only 4 hours. The following day she was re-injected with absolute alcohol and obtained excellent relief of pain which lasted until the time of her death 6 months later. It would appear, at least in this instance, that alcohol has a better penetration of roots than phenol-Pantopaque.

The possible delayed action of phenol-Pantopaque and the interim phase of reversibility of the induced lesion were well demonstrated in a patient in whom 1:10 phenol-Pantopaque was confirmed radiologically to rest in the caudal dural sac, below the lumbosacral joint. Approximately 90 min. after the injection, when the patient changed from a sitting to a supine position, weakness and numbness developed in the lower extremities. He immediately was placed erect and within a few minutes these symptoms had subsided.

Complications following injections of 1:10 phenol could not be appraised as this strength was used only in cases in which severe neurologic deficit already was present. In 1 successful injection for pain in the "saddle area", resulting from pelvic carcinoma, no sensory loss could be demonstrated in the perineum.

A concentration of 1:15 phenol-Pantopaque was used for 10 injections in 8 patients. Six of these were patients suffering a recurrence of pain after injections of 1:20 phenol. Seven injections resulted in partial or "fair" relief. In 3 instances pain was unchanged or relief lasted only a brief period. One patient with carcinoma of the cervix had been relieved of pain in the right hip and leg with a unilateral cordotomy but did not respond to 1:15 phenol which was injected for pain in the left hip and leg which became apparent soon after her cordotomy. In this instance there is little doubt that cordotomy was the superior method of relief of pain. One individual was relieved of the constant ache of metastatic disease of the hip but continued to suffer excruciating pain whenever this member was moved. Two injections were followed by complaint of numbness in the affected limbs and each time hypalgesia and hypesthesia were demonstrable for several days after the injections.

A concentration of 1:20 phenol was employed for 19 injections in 10 patients and was of questionable or no benefit in 17 instances. Two patients had initial relief of pain, but each suffered a recurrence within 1 month. One of these is a patient with Paget's disease who had pain and hypalgesia in the 4th lumbar dermatome bilaterally and in whom the L3-L4 intervertebral foramen was narrowed by Paget's disease. The sleeves of the 2nd through 5th lumbar roots were shown to be filled with phenol-Pantopaque at the time of his treatment. Immediate relief without increased sensory or motor loss occurred at the time of injection, but when seen a month later pain had recurred. Another patient in this group had undergone nephrectomy for renal stones on two occasions. He suffered intractable pain in and about the incisional scar. On three separate occasions he was injected subdurally with 1:20 phenol-Pantopaque with good relief, only to have recurrence of the pain in each instance within 30 days of the injection.

There was but 1 adverse reaction in this group. This was an individual who suffered numbness of the leg and loss of ankle reflex for 4 days following a subarachnoid injection of 1:20 phenol.

The group treated for somatic pain consisted of 15 patients with malignancy and 6 with benign conditions. Only 1 of the latter group was relieved of his pain for longer than 30 days. This occurred in a rodeo rider who suffered pain in the dorsal region secondary to traumatic osteoarthritis of the spine. The relief of pain following an extradural injection of 1:20 phenol has now lasted 9 months. Only 3 patients with malignancy are alive at the time of this writing. One received no benefit with 1:10 phenol and was relieved subsequently with an alcohol injection, the second patient has remained comfortable 12 months following subarachnoid injection of 1:10 phenol, and the third patient obtained only temporary partial relief of pain with 1:15 phenol. This latter patient was relieved