Prolonged relief of chronic pain from local anesthetic blocks

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In a fascinating essay on the future of local anesthetic agents, Wall (1) cited a 1990 paper from the Karolinska Institute in Stockholm, Sweden, entitled “Prolonged relief of neuralgia after regional anesthetic blocks: A call for further experimental and systematic clinical studies” (2). The Swedish researchers had found that two-thirds of 38 patients with neuralgia experienced prolonged (up to six days) relief of pain after blocking of the injured nerve. Wall went on to state:

*That report makes no sense to those who ‘know’ as fundamental dogma that pain is generated by nerve impulses in peripheral nerves and that the analgesic action of local anaesthetics is to briefly block those impulses. Since the report makes no sense to the dogmatists, they can forget it or ignore it or declare it to be a placebo response.*

Wall clearly did not regard the Arner et al (2) result to be placebo responses and went on to suggest a number of mechanisms to explain the observed results.

Almost a half century earlier, Bonica (3), the ‘father of pain clinics’, had made similar observations. In the first edition of his textbook (3), he noted that analgesic blocks often resulted in dramatic and prolonged relief of pain, outlasting by hours and days the duration of impulse blockade. Bonica himself suffered chronic severe musculoskeletal pain (4) and underwent countless nerve blocks, epidurals and trigger point injections to keep the pain in his hips, shoulders and lumbar spine under control.

Travell and Simons (5) wrote extensively on the use of local anesthetic injections into myofascial trigger points, producing the definitive work *Myofascial Pain, The Trigger Point Manual*. Regrettably, this method is not taught to medical students, and neither experts in physical medicine nor experts in rheumatology appear to have much knowledge of it.

One of the few clinical reports regarding the apparent effectiveness of repeated nerve blocks appears in this issue of *Pain Research & Management* (Rothbath et al, pages 243-248). This report shows considerable benefit from this modality in a highly selected but important sample.

Such clinical studies have been scarce, despite evidence that repeat nerve blocks, trigger point injections and other blocks of somatosensory and sympathetic nerves are commonly performed in a number of pain clinics, particularly those run by anesthesia-trained physicians. The practice appears to have evolved in response to requests from patients who frequently state that no other treatment modality, including fairly large doses of opioids, gives the complete relief of pain produced by the nerve blocks. In the ‘intractable’ patient group, the pain always returns, but as reported in the study by Rothbath et al, there is a remarkably long period of relief far outlasting the normally accepted duration of anesthetic action, as also observed by Bonica (3) and Arner et al (2). It appears that patients have identified the benefits of local anesthetic blocks, despite a general lack of understanding of the phenomenon by the treating physicians, many of whom have been entirely unaware of the literature cited above.

A case report of long term relief of chronic angina from repeated stellate ganglion blocks using 0.5% bupivacaine (this is a needlessly high concentration of local anesthetic for sympathetic nervous system blockade, by the way) may also be relevant to this discussion (6). These workers reported the remarkable relief of ‘intractable’ angina in an individual from stellate ganglion blocks, with benefits lasting several months from a single sympathetic block, and with similar duration of relief from repeated blocks.
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It should be included in these considerations that researchers increasingly consider most chronic (‘nonspecific’, i.e., nonarthritic) musculoskeletal pain to be neuropathic in origin. Basbaum (7) stated, “...persistent pain should be considered a disease state of the nervous system, not merely a symptom of some other disease conditions”.

In many cases of neuropathic pain, the pain is sympathetically maintained (8).

Recent scientific research has provided further understanding of underlying mechanisms. Studies of the animal models of neuropathic pain, including the chronic constriction model of Bennett and Xie (9), have shown that local anesthetic blocks and sympathetic blocks markedly reduce pain behaviour in the animals (8).

McCormack (10,11), in a series of articles in Pain Reviews, referred to the clinically observed long term analgesic effect of single anesthetic blocks and speculated that such blocks cause temporary abolition of spontaneous ectopic discharges, resulting in abolition of dynamically maintained central hyperexcitability as well as reinforcing endogenous G-protein-coupled receptor inhibition of n-type voltage-sensitive calcium channels.

Finally, there is an increasing body of literature on the benefit of neuropathic pain from intravenous infusion of lidocaine, as shown in a recent review by Mao and Chen (12).

One intriguing aspect hinted at in the Rothbart et al paper is the observation that some patients seem to obtain virtual cures of their pain from the nerve blocks. Is it possible that such cures could be induced more frequently if nerve blocks were instituted earlier, before ‘intractability’ sets in? The high cost of chronic musculoskeletal pain mandates that such investigations be pursued. The suggestion that palliative nerve blocks in the intractable patient population are a legitimate and valuable form of pain relief also demands further systematic investigation, as recommended by the Swedish investigators.

REFERENCES

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