SUPRASCAPULAR NERVE BLOCK: EVALUATION IN THE THERAPY OF SHOULDER PAIN *

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PAIN and alteration of function, as evidenced by limitation or impairment of motion, form a symptom complex which characterizes most disorders of the shoulder. The discussions of these disorders, whether informally or in text books or other medical literature, are characterized by wide disagreement in terminology, pathologic changes to be found, and particularly as to specific methods of therapy. This discussion, at the risk of further confusion, is presented to tabulate the results with suprascapular nerve block for painful shoulder. There is little pointed evidence that this simple therapeutic procedure has been used with the frequency it merits. The results herein reported would seem to substantiate this opinion. The study was completed simply by recording procedures and results for 100 consecutive patients accepted in the nerve block clinic who had pain and disturbance of function of the shoulder joint.

A statistical compilation of types of shoulder pain, without radiologic evidence of fracture, dislocation, or gross organic disease (11), reveals three main categories: subacromial bursitis, calcified deposits, and rupture of the tendinous capsule. The existence of a bursitis or calcified deposit does not always predicate the presence of a corresponding symptomatology. Bosworth (2), in the course of routine fluoroscopic examination of 5,061 asymptomatic employees, discovered visible deposits in one or both shoulders in 138 (2.7 per cent) of those examined.

Many clinicians agree that immediate removal of the calcium is not the necessary perequisite for clinical improvement of a calcified bursa. Milgram, in 1934, reported that patients with bursitis were relieved of pain following multiple needle punctures of the bursa. This procedure promoted and facilitated vascularization, which in turn was followed by eventual absorption of the calcium. Attempts to aspirate the calcium with a syringe and needle yielded approximately the same end results but produced more prompt pain relief and earlier mobility (9, 12, 17).

In 1937, Patterson and Darrach (19) described the effects of bursal irrigation with procaine hydrochloride and saline solution. Further

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observations of this method were reported by Patterson and Patterson in 1940 (20). Two per cent of their patients required general anesthesia to obtund the pain which was present on injection and manipulation. In many of the reported case histories, the patients experienced relief of pain and complete mobility. A few patients, however, did not improve.

Patients with acute bursitis respond to many of the accepted procedures which have been advocated. However, patients with chronic bursitis are more resistant and the results are not as gratifying as in acute bursitis. Radiation therapy has been utilized to treat individuals with bursitis. Brewer and Zinc (5) stated that if a patient does not respond within forty-eight hours after a course of radiation therapy, the method is to be considered a failure and other types of therapy are indicated. In a similar series of patients with chronic bursitis, these authors reported that 30 per cent of the patients were improved in varying degrees. Only an occasional patient was cured by this method. A comparison of the use of roentgen therapy and physical therapy yields almost identical results (22).

Attempts to treat bursitis by the systemic administration of therapeutic agents have been reported. Pelner (21) over a period of five years successfully treated 75 patients by the intravenous injection of ferric cacodylate. If relief was not obtained immediately, the diagnosis of bursitis was regarded as doubtful.

Surgical excision of bursal disease is recommended when conservative treatment produces no alleviation of pain or improvement in the range of motion. This procedure is generally effective and minimizes the possibility of recurrences (18).

The therapy of other types of shoulder pain does not entail any standard procedure. Various attempts have been made to explain rationally and treat shoulder pain using Lewis and Kellgren's observations (10) on the distribution and origin of pain. Travell, et al. (25) reported good results in many of their patients with idiopathic shoulder pain by injecting "trigger zones" and tender muscle areas.

The diagnosis of a supraspinatus or capsular tear is frequently overlooked except in patients with massive or complete separations. Mosley (18), utilizing Codman's observations on Leriche's (13) and Steindler's (23) work with the injection of sprains and tender areas, described the use of procaine infiltration of the injured area as a prognostic, diagnostic and therapeutic measure. Small tears often respond to a single injection. Pain disappears and mobility returns. If procaine infiltration restores full motion the prognosis is excellent. If after infiltration, the patient is not able to maintain his arm in abduction beyond 90 degrees, operative intervention may be indicated.

In 1941 one of us (E. A. R.) with Wertheim (26) introduced the technic of blocking the suprascapular nerve at the lesser scapular notch. The desirability of establishing the block at this point was emphasized

because of its accessibility and because no branches from this nerve to the shoulder are given off before it passes through the lesser scapular notch. The suprascapular nerve is the sensory pathway from the shoulder joint, the acromioclavicular joint, and the periarticular structures about the shoulder joint. Suprascapular nerve block was advocated as an adjunct in the treatment of chronic shoulder pain. It was also considered a supplementary procedure which could be utilized to alleviate the pain attendant with traction, manipulation and massage of the shoulder joint.

The patients supplying the data for this report had been examined before their admission to the nerve block clinic, and a diagnosis made by the referring physicians. Regular follow-up dates were assigned. If pain recurred before the routine appointment date, the patient could

TABLE 1

Diagnosis	No. of Patients	Results
Acute Bursitis	Total—42	
	37	Good results following 1 block.*
	4	Good results following 2 blocks.
	1	Immediate result not good. No return for follow-up.
Chronic Bursitis	Total—29	
	18	Good results following 1 block.
	4	Good results following 2 blocks.
	2	Good immediate results following 2 blocks. No return for follow-up.
	2	Good results following 3 blocks.
	1	Good result following 4 blocks.
	1	Poor result after 2 blocks. No follow-up.
	1	Poor result after 3 blocks. Good result after stellate block.
Painful Shoulder following dislocation 6 months previously	Total—1	
	1	Poor result. Pain increased following block.
Painful Shoulder. No diagnosis	Total—10	
	8	Good results.
	1	Result poor with suprascapular block alone. Good result with injection of sympathetics.
	1	Pain relief obtained but limitation of motion present.
Cervical Osteoarthritis	Total—5	
	3	Poor results.
	1	Good result.
	1	Poor result after suprascapular block. Good after injection of cervical nerves.
Fibrositis	Total—2	
	1	Good pain relief for 2 weeks. Refused reblocking.
	1	Good result after 2 blocks.

TABLE 1—*Continued*

Diagnosis	No. of Patients	Results
Metastatic Carcinoma	Total—3	
Carcinoma of lung—metastases to shoulder girdle	1	Poor result. Relief for 1 hour. Refused reblocking.
Carcinoma of bladder with metastases to both shoulder girdles	1	Good result. Procaine and alcohol used. Patient died 2½ weeks after last block.
Carcinoma of bladder with metastases	1	Poor result.
Capsular Tear	Total—4	
	2	Partial tear. Pain relief with increased motion.
	1	Complete tear of supraspinatus tendon. Temporary relief after each block (4). After surgical repair, pain which had persisted, disappeared following block.
	1	Complete tear(?). After block, no pain but unable to maintain arm in abduction. Referred to surgery.
Muscle Injury (?)	1	Poor result.
Myositis	1	Pain relief; no improvement in motion.
Fractured Humerus (2 years previously)	1	Pain relief; no improvement in motion.
Colles's Fracture	1	Moderate pain relief. Complete following injection of sympathetics.

* All blocks are made with 1.5 or 2 per cent procaine hydrochloride unless otherwise stated.

be seen and a nerve block performed by calling or returning to the clinic.

A simplified breakdown into number, diagnosis, and results is tabulated in table 1.

COMMENT

In a series of 100 consecutive, unselected patients with shoulder pain, the greatest number was admitted with the diagnosis of bursitis. In both the acute and chronic variety, a good result was obtained following one block in the majority of patients. Three patients with bursitis did not respond to suprascapular block.

The reasons for alleviation of the existing symptomatology in this syndrome are not known. The possibility of vasodilation following blocking of the sympathetic components of the suprascapular nerve should be considered. This would encourage vascularization and facilitate absorption of calcium deposits. (In follow-up examination, several patients have demonstrated roentgenologic evidence of loss or disappearance of calcium following suprascapular block). A second possibility is that pain relief permits motion which, in turn, improves

vascularization. Leriche's theory of interruption of impulses through a constantly recurring "vicious cycle," is also tenable. Regardless of the mode of action, gratifying results with this procedure empirically recommend its use in the treatment of bursitis.

The effects of suprascapular nerve block on pain of osteoarthritic origin were not uniformly successful.

Patients with "idiopathic shoulder pain" experienced alleviation of symptoms following suprascapular nerve block. The results were similar to those obtained by Travell, et al. (25).

Supraspinatus and capsular tears may be effectively treated by nerve block if the injury is not complete or massive. In a few patients, a combination of suprascapular nerve block and blocking of the sympathetic nerves to the upper extremity was necessary to produce the desired results.

SUMMARY

The results of suprascapular nerve block on 100 consecutive, unselected patients with shoulder pain are reviewed.

Suprascapular nerve block is a valuable adjuvant in the therapy of bursitis.

In patients with capsular tears, its value in diagnosis, prognosis or therapy depends upon the extent of the injury.

Suprascapular nerve block is useful also in treating shoulder pains originating from many other sources.

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