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PAIN RELIEVING EFFECT OF SCALENOTOMY

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A follow-up was made of 37 patients treated by section of the anterior scalenus muscle. They complained of pain and/or paraesthesia in the upper extremities and tenderness over the muscle. All experienced relief of pain after injection of a local anaesthetic into the anterior scalenus muscle. Twenty-five patients were markedly improved. Patients with neurological signs seem to have a better result than those without ($P = 0.06$).

Key words: scalenus anticus syndrome

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In patients with widely distributed pain or paraesthesia in the upper extremities the causal factor can be difficult to localize. A review is presented of 37 patients who were treated with scalenotomy, after an injection of local anaesthetic into the anterior scalenus muscle had given relief of pain or paraesthesia.

PATIENTS AND METHOD

All patients who underwent anterior scalenotomy from 1 April, 1961 to 30 June, 1975 have been reviewed. All had pain and/or paraesthesia in the upper extremity and tenderness over the anterior scalenus muscle, except for three, who have been excluded.

The investigation includes 37 patients on whom 38 scalenotomies have been performed. The results of the operation were judged partly by the most recent notes in the case records—on an average 110 days (3–350 days) postoperatively—and partly from a questionnaire which was returned by 36 patients an average of 54 months (5–168 months) postoperatively.

RESULTS

Sex and age distributions in the patients are shown in Figure 1. Their symptoms, signs and X-ray findings are included in Tables 1–3. Neurologic signs were found in 16 patients. Weakening of the handshake was seen in eight patients, and one patient had weakened flexion/extension of the elbow joint. Several patients presented with atrophy; two had atrophy of the thenar muscles, one of the hypothenar muscles, one of the interosseous muscles and one of the upper arm. The results of the operation are shown in Tables 4 and 5. Because of the two maxima in the age distribution curve, we divided the patients into two groups: one including patients younger than 30 years, the other one those older than 30. We analysed signs and efficacy of the operation in the two groups separately. Then they were compared according to the hypergeometric distribution (Therkelsen 1974). There was no difference in signs between the two groups. The result of the operation was statistically better in the younger group, comparing the statements in the case records ($P = 0.005$), but there was no difference if comparison was made of the questionnaires ($P > 0.15$). Patients with neuro-

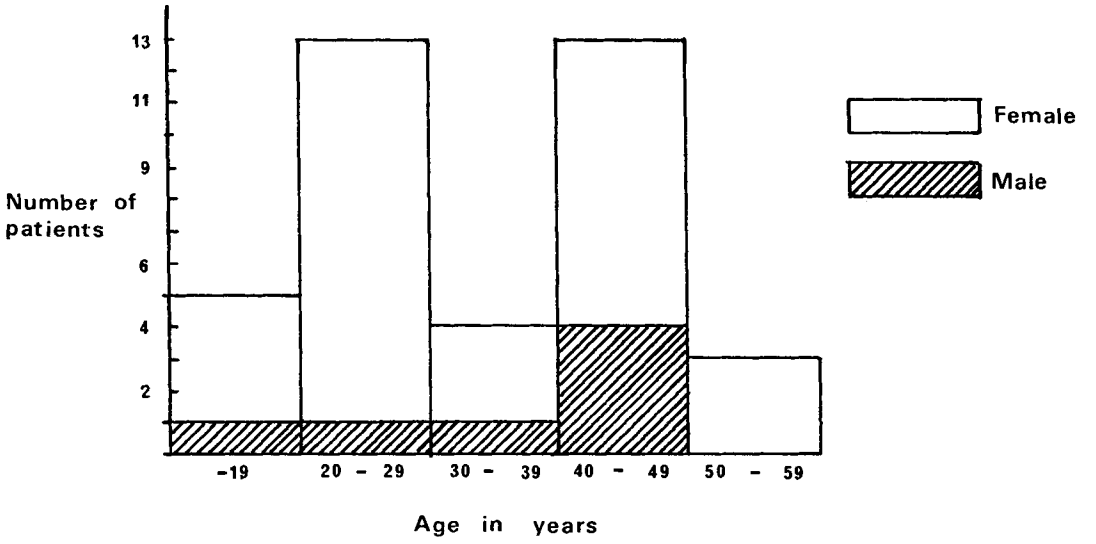

Figure 1. Sex and age distribution.

logic signs seem to be relieved more often than patients without ($P = 0.06$). There was no difference in the efficacy of the operation between patients with or without cervical rib. When present, it was never removed. The patients had had symptoms for an average of 2½ years before the operation (1 month–15 years).

Table 1. Symptoms.

Diffuse pain or paraesthesia	19
Radicular pain located ulnarly	12
Radicular pain located radially	2
Both diffuse and radicular pain	5

Table 2. Physical signs.

	Present	Not present	No information in the case record
Hypaesthesia	12	22	4
Paresis	9	17	12
Muscle atrophy	5	27	6
Muscle atrophy	18	13	7

Table 3. X-ray changes.

No abnormality	21
Cervical rib	8
Cervical spondylosis	3
Large transverse process of c. VII	6

Table 4. The effect of scalenotomy as judged by the replies to the questionnaire.

	Patients older than 30 years	Patients younger than 30 years	In all
No symptoms	4	1	5
Negligible symptoms	7	12	19
Unchanged symptoms	6	4	10
Aggravation	1	1	2

Table 5. The effect of scalenotomy as judged by the report in the case record.

	Patients older than 30 years	Patients younger than 30 years	In all
No symptoms	3	3	6
Negligible symptoms	6	13	18
Unchanged symptoms	11	2	13
Aggravation	0	0	0

DISCUSSION

In patients with pain or paraesthesia in the upper extremity, with tenderness over the anterior scalenus muscle, the diagnosis of "scalenus (anticus) syndrome" was made when no other obvious cause, as for instance cervical disc syndrome, was found (Naffziger & Grant 1938, Judovich et al. 1944, Shenkin & Somach 1963). However, Shenkin & Somach (1963) stated that the signs alone were insufficient for the diagnosis. At the Orthopaedic Hospital, in Aarhus, we agree with this and have used injection of a local anaesthetic (1 per cent Lidocaine) to relax the muscle and to see whether this would relieve the symptoms. In other clinics the physical examination has been supplemented by subclavian arteriography (Somerndike et al. 1973) and ulnar nerve trunk conduction studies (Krogness 1973).

There are uncertainties in both methods of assessing the effect of scalenotomy. In the case records the follow-up varied. In the questionnaires, filled in many years after the operation, comparison with the preoperative state must be regarded as uncertain. The questionnaires show that the effect did not always last. The difference in efficacy of the operation, according to the two methods of arriving at the results, may be caused by a faster recovery in the younger patients.

Comparing our results of scalenotomy with other reports is difficult for three reasons: most investigations included relatively few patients; there is a varied incidence of cervical osteochondrosis and cervical rib; and different indications for scalenotomy have been used.

Rasmussen & Simonsen (1959) reported on 20 patients with "scalenus anticus syndrome"; 70 per cent were relieved, 80 per cent had cervical rib and 13 were younger than 30 years. Kallio & Rokkanen (1964) described 51 patients. Seventy-eight per cent were improved by scalenotomy, 47 were older than 30 and 90 per cent had cervical osteochondrosis. Shenkin & Somach (1963) conclude that patients with cervical rib and cervical osteochondrosis / abnormal myelogram are relieved more often than patients without these signs. We could not confirm this concerning cervical rib.

Conclusion

A comparison of our results with other reports does not seem to indicate that diagnostic injection of the muscle is a better criterion for selection for operation than a careful clinical examination.

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