CERVICAL SYMPATHETIC BLOCK IN PERIARTHROSIS OF THE SHOULDER JOINT WITH SECONDARY REFLEX DYSTROPHY

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Periarthrosis humeroscapularis with restricted mobility of the shoulder joint is in some cases accompanied by changes in the hand on the same side (shoulder-hand syndrome). In advanced cases the hand is slightly cyanotic and damp, and there is stiffness and swelling of the fingers and hand, mostly in the morning; there may be pain and varying degrees of perspiration; the skin of fingers and palms may be drawn tight so that the lines of the hand are effaced. The appearance is very much like that of post-traumatic reflex dystrophy, both in the violence of the pain and in the capricious way in which some persons are attacked by reflex dystrophy, others not. Still later in the disease fibrous nodes or strings may appear in the subcutaneous tissue in the palm of the hand or in the interstices, and osteo-arthritis may in rare cases appear in the interphalangeal joints.

The fibrous changes may virtually diminish in most cases, even though there may still be some nodes or tightness hindering the full spreading of the fingers and causing lasting disablement. The changes in the soft tissues of the hand and fingers are of the same hard character as the changes in the soft tissues around the affected shoulder joint.

The aspect of the hand, the resemblance to the post-traumatic reflex dystrophy, and the course of the disease, makes one suspect that the sympathetic nervous system is involved; both Kahlmeter (1936) and others have had the same idea, and as post-traumatic reflex dystrophy can be improved or cured by sympathectomy, it seems that it is worth paying attention to the sympathetic nervous system in cases of periarthrosis humeroscapularis simulating reflex dystrophy. One might hope (1) to avoid further development of restricted mobility of the shoulder joint; (2) to avoid further development of stiffness of hand and fingers; (3) to soften the leathery, dry hand in old cases of reflex dystrophy; and (4) to eliminate pain.

Treatment

In 1944 two patients with periarthrosis humeroscapularis were treated under my direction by stellate ganglion block. One of them had about ten blocks without any definite effect. The other one had one single block which was completely without effect. The technique used at the time seemed to me so difficult that I found it impracticable to perform it to any greater extent on ambulant patients.

At the rheumatological congress in Copenhagen in 1947, Otto Steinbrocker from New York presented a report on six cases of periarthrosis humeroscapularis with secondary reflex dystrophy treated by stellate ganglion block and block of the brachial plexus. Dr. C. Gillmor, Kansas City, was kind enough to demonstrate to me the technique applied, and he informed me at the same time that Dr. Steinbrocker and he in most cases only used stellate ganglion block, and that one injection was, in their opinion, often sufficient.

Method.—The injection is made in the following manner. The patient lies on his back with a pillow under his neck and the upper part of the back, so that the head is bent backwards. The cricoid cartilage is palpated, and its lower edge and the medial border of the m. sternocleidomastoid are marked with iodine cotton. The needle (Rowika 80 × 100) is introduced along the lower edge of the cricoid cartilage just between the medial border of the sternocleidomastoid and the centre line of the neck, so that the introduction is made between the trachea and the carotid artery, directly above the glandula thyroidea. The needle is introduced until it touches the periosteum on the cervical vertebra, and 10 c.cm. of 0.5 per cent. solution of procaine without adrenaline is slowly injected. Before the injection the piston is pulled a little back, so that one is sure of not injecting into the carotid artery. (I always have evipan on hand in case the parathyroid gland should be affected.) The patient is warned not to make any swallowing movement while the needle is introduced and during

the injection. Steinbrocker calls the injection a stellate block, which in most cases it is, but even if the needle comes into contact with the sympathetic above the ganglion the same result is achieved, because part of the liquid presses down on the ganglion.

To some of the patients the injection is so disagreeable, on account of the region in which the injection takes place, and also because they are not permitted to do any swallowing, that one has to stop before the intended quantity has been injected. In other cases there has been such a pronounced relief from pain and stiffness that the patient himself has expressed the desire to continue.

Results

Since last year I have treated about fifty patients with this form of sympathetic block. I have analysed the results in the first twenty-four patients. The shoulder-hand syndrome was the main indication for operation, and these patients made up sixteen of the twenty-four. The remaining eight were patients without this symptom but with, for example, pains in the shoulder and arm only, but of such violence that I found it worth while to try the block with the sole object of relieving the pain. I have also treated two patients with helodermi (fibrous pads on the dorsal aspect of the middle joints of the fingers), and a few others. Altogether these twenty-four patients have had eighty-six blocks (see Table).

Most patients had consulted me privately, with the result that routine tests, especially measuring of the skin temperature and the perspiration test, were not undertaken. The selection of patients and assessment of the result of injection was purely clinical. Unless otherwise stated, the ordinary

medical and neurological examination showed nothing abnormal.

Some of the patients were women at the climacteric and with climacteric characteristics; that is to say, they were as a whole rather fat and with puffy subcutaneous tissues. All the patients have formerly been given physical treatment with no satisfactory result.

Horner's symptom presented itself after approximately 40 per cent. of the injections, but the result seemed independent of the occurrence of Horner's symptom. As can be seen from the Table, in the group with periarthrosis humero-scapularis about 60 per cent. of the cases improved and there was no effect in 40 per cent. In no case did the block aggravate the condition or produce lasting discomfort.

The improvement has mostly been in diminution of pain and also of swelling and stiffness of the fingers and hands. The relief has often come immediately after the injection. In one patient the effect was excellent: after an attack of reflex dystrophy four years before, two fibrous nodules appeared in the first interstitials, and fibrous tension in the thenar, analogous to Dupuytren's contraction. The nodules were much softer after two injections; one of them disappeared completely, and the hand became more supple and soft. In the case of a patient with helodermi the nodules became softer after the first injection; she was able to put on her rings, which she had been unable to do for five or six years, but the good effect disappeared during the following two months, and no improvement followed a series of injections a few months later. In another patient with helodermi the operation was without result.

The cause of the result of the treatment is

TABLE
ANALYSIS OF RESULTS OF STELLATE GANGLION BLOCK

	Number		Average age		Duration (average number of months)		Average number of injections		Effect	
	M.	F.	M.	F.	M.	F.	M.	F.	Unchanged	Improved
Periarthrosis humeri with secondary dystrophy ..	4	12	55	34	4	6*	4	4	6	10
Other cases	4	4	47	42	$\frac{1}{2}$ to many years	One month many years	2	3	6	2

* Excluding a single case of four years' duration.

uncertain: various explanations exist. As the ailment is supposed to be due to a dysfunction of the sympathetic one can assume that the effect of the block depends on a paralysis of the sympathetic, which is part of the reflex curve that keeps the disturbance of circulation going. The soothing effect may be due to the fact that the pain is purely "sympathetic" (Shaw, 1933). Mason (1948) refers to a case of shoulder-hand syndrome treated with the same technique.

Conclusions

After the injection in the stellate ganglion with 10 c.cm. of 0.5 per cent. procaine solution, improvement was obtained in 60 per cent. of patients with periarthrosis humeroscapularis with secondary reflex dystrophic disturbances of the hand; 40 per cent. remained unchanged. The injection technique is difficult and the injection is a little disagreeable for most patients, but hardly dangerous.

In acute cases there may be improvement of pains and swelling of fingers and hand, and in chronic cases improvement in the stiffness of hand and fingers may take place, and fibrous nodules may disappear.

It is true that this series is small and, as the symptoms of the disease were not clearly defined, the indications for the treatment rested on a rather vague clinical judgment, the patients not having been submitted to laboratory investigations and no perspiration test or skin-temperature measurements having been done. Nevertheless, I have reported the results because periarthrosis humeroscapularis with secondary reflex dystrophy is a long drawn out and painful ailment, and if the hand is also included one is even less certain about the duration and prognosis. I consider therefore that

any sensible therapeutic measure should be taken to shorten or relieve the disease.

REFERENCES

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Bloc Sympathique Cervical dans la Périarthrose de l'Articulation de l'Epaule avec Dystrophie Secondaire Réflexe

Une injection de 10 mm.c. de solution de procaine à 0.5 pour cent dans le ganglion étoilé fut suivie d'une amélioration dans 60 pour cent des cas de périarthrose huméro-scapulaire avec des troubles dystrophiques réflexes secondaires de la main; 40 pour cent demeurèrent inchangés. La technique de l'injection est difficile et l'injection est un peu désagréable pour la plupart des malades, mais elle n'est guère dangereuse.

Dans des cas aigus il peut y avoir une amélioration des douleurs et de l'enfllement des doigts et de la main, et dans des cas chroniques une amélioration de la rigidité de la main et des doigts peut se produire; les nodules fibreux peuvent disparaître.

Il est vrai que cette série est petite et, comme les symptômes de la maladie n'étaient pas clairement définis, les indications du traitement se basaient sur un jugement clinique plutôt vague; les malades ne furent pas soumis à l'examen de laboratoire, l'épreuve sudorale ne fut pas faite et la température de la peau ne fut pas déterminée. Malgré cela j'ai rapporté sur ces résultats parce que la périarthrose huméro-scapulaire avec dystrophie réflexe secondaire est une maladie persistante et douloureuse, et lorsque la main se trouve également atteinte, on est encore moins certain de la durée et du pronostic. Je pense donc que n'importe quelle mesure thérapeutique judicieuse doit être prise afin d'abrégier la maladie ou de soulager le malade.