AN UNUSUAL COMPLICATION AFTER STELLATE GANGLION BLOCK

Sir,—I read with much interest the case report by Florella Magora (*Brit. J. Anaesth.* (1964), **36**, 379). I would like to point out that from the material presented and the use of 10 ml of 1.5 per cent lignocaine hydrochloride, I do not believe that this complication was a subarachnoid injection. Had it been a subarachnoid injection, total spinal analgesia would have resulted.

We have done over 3,000 stellate ganglion blocks using the anterior (paratracheal) approach and we have experienced in two patients the same type of complication described by Dr. Magora. I believe the complication was not a subarachnoid injection but actually a placement of solution in the epidural space with a resultant segmental type of anaesthesia limited to the cervical area and perhaps the upper thoracic dermatomes.

Further comment on the assumption that this was a subarachnoid block by the author of the article would be in order.

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A copy of the above letter was sent to Dr. Magora, who replied as follows:

Sir,—I am grateful to have Dr. Moore's valuable comment on my case report. As Dr. Moore does not agree with my interpretation of the complication, I would like to add the following:

A total amount of 10 ml of 1.5 per cent lignocaine hydrochloride was injected but, as mentioned in my article, only a small amount (about 1 ml of the total amount) was injected into another site when the patient moved suddenly. As soon as this was noticed, the injection of the material was stopped (which explains the very small amount already mentioned) and only after reinsertion of the needle in the desired location was the injection completed.

If my assumption is correct, namely that I inadvertently injected only about 1 ml of 1.5 per cent lignocaine hydrochloride, the following clinical facts presented in my article seem to bear out the correctness of my interpretation:

(1) The rapidity of onset of symptoms, namely drop in blood pressure and sensory loss immediately on the completion of the injection, tends to occur with subarachnoid block, while in epidural block there is a longer time interval between the injection of the solution and the appearance of clinical signs.

(2) Contralateral paralysis of the arm. This may be explained by turbulent current during a subarachnoid injection of 1 ml of 1.5 per cent solution of lignocaine. If motor involvement occurred with the same amount injected into the epidural space, one would have expected an ipsilateral effect.

(3) Our patient (as observed by Dr. Moore) had a segmental type of anaesthesia limited to the cervical and probably upper thoracic area. 1.5 per cent lignocaine may be regarded as an isobaric solution. According to Bonica (1953) 1 ml of an isobaric solution injected into the subarachnoid space at the level of the sixth cervical interspace gives anaesthesia from the third cervical to the third thoracic segment. The same amount 15 mg (1 ml of 1.5 per cent lignocaine), injected in the epidural space (Bromage, 1962) will block only one spinal segment.

(4) The possibility of inadvertent subarachnoid injection when performing a stellate ganglion block is described (Bonica, 1953; Moll, 1951; Orkin et al., 1950; Moore, 1954).

We have, however, failed to find a report of any epidural injection occurring during stellate ganglion block.

The early clinical and experimental observations by Moore (1953, 1958), Frumin et al. (1953) and the most recent publications by Bromage (1962, 1963), on the spread of local anaesthetics and their site of action, stress the significance of the varied ways of diffusion into the neuraxis.

At the dural ink cuffs (where dorsal and ventral roots fuse near the intervertebral foramina) permeability was found to be increased. Material placed in the vicinity of this region diffuses between the subarachnoid, subdural and epidural spaces (Bromage, 1962).

During a paratracheal stellate ganglion block the needle is placed not far from the dural cuff. When injecting large quantities of solution, such as 10 ml, it is possible but obviously rare to obtain an epidural spread in the cervical region.

Dr. Moore, in 3,000 cases, mentions only two such cases. In our relatively small series of 350 stellate ganglion blocks, we have as yet not found any evidence of epidural involvement.

The rarity of epidural spread may be due to the rapid neural fixation of the local anaesthetic provided, of course, that the needle is placed in the correct fascial plane near the stellate ganglion. This is one more reason why a careful technique and an accurate location and maintenance of the needle in the correct position is so important when performing a stellate ganglion block.

I am most indebted to Dr. Moore for his comment and for his help in clarifying a few pertinent points.

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