PROLONGED BLOCK WITH RECOVERY AFTER EXTRADURAL ANALGESIA FOR LABOUR

G. V. PATHY AND M. ROSEN

SUMMARY
A patient had a prolonged block after continuous extradural analgesia in labour. The block was unilateral, but 60 min after a second block there was bilateral sensory and motor loss. The original unblocked side did not recover fully until more than 60 hr. The local anaesthetic agent was 18 ml of bupivacaine 0.5% plain.

Extradural analgesia for the relief of pain in labour has become widely practised in recent years especially since the introduction of the long-acting local analgesic bupivacaine. As neurological complications are the most feared consequence of this technique, it is a matter of concern should the nerve block outlast its expected duration.

CASE REPORT
A 26-year-old patient who had been pregnant twice previously presented in labour. During her first delivery she had pethidine for the relief of pain; a vacuum extraction was necessary under general anaesthesia. In her second labour she had a spontaneous vaginal delivery with nitrous oxide in oxygen (Entonox) for analgesia. However, she was not satisfied with the pain relief obtained from either pethidine or nitrous oxide in her previous labours, and after an explanation of extradural block and its possible complications she decided upon this method. Her pregnancy had been normal and physical examination revealed no abnormality.

The patient was positioned on her left side. Using a Tuohy needle and an air-filled syringe, the extradural space was located at the L2–L3 interspace by the loss of resistance method. About 4 ml of air was injected. During insertion of a Portex catheter to 15 cm, she complained of a mild cramp-like pain down her right leg. The catheter was withdrawn to 10 cm from the skin, leaving 4–5 cm in the extradural space. A Millipore filter unit (Swinnex 13) was connected, and after ensuring that no blood or c.s.f. could be aspirated 5 ml of bupivacaine 0.5% plain was injected. Five min later she was turned on to her right side and another 5 ml of bupivacaine 0.5% plain was injected. The patient obtained complete pain relief on the left side almost immediately but even after half an hour she had experienced no relief on the right side. A further 4 ml of bupivacaine 0.5% plain was injected with the patient on her right side. After another 10 min had elapsed analgesia remained confined to the left side and extended from T8 to S2.

With the catheter remaining in position, with the patient in the right lateral position, the extradural space was located at the L3–L4 interspace. A second catheter was inserted, without paraesthesia, and was withdrawn to the 10-cm mark. After aspiration, 4 ml of bupivacaine 0.5% plain was injected through a Millipore filter. Thirty min later, still on her right side, the patient had no pain relief on that side. She did not wish any other analgesia and lying mainly on her right side, she had a spontaneous delivery 45 min later. At this stage the patient reported little pain and felt completely numb down to both knees. Objective evidence of sensory loss was now present on the right side. The extradural catheters were removed within 30 min and the patient was transferred back to the ward.

Next day at routine examination, just more than 18 hr after the last dose of bupivacaine, the patient stated that she still had numbness and weakness in her right leg which was slowly improving. The numbness was less in the right thigh than it had been on the previous night. The left side felt normal. She had difficulty in standing up because of weakness on the right side. Examination showed marked reduction of active movements of the right hip and knee. The knee jerk was absent and the plantar reflex was normal on the right side. There was sensory loss to touch and pinprick in segments T10–L4 and S1–S2.

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The diagnosis was thought to be either an unusually long action of the local anaesthetic or an extradural haematoma. Since the patient said she was improving it was decided to await progress and to seek a neurosurgical opinion. That afternoon (27 hr after the last dose) she felt better, complaining only of heaviness of her right leg. She was able to stand without difficulty and to walk with support. Examination at this stage showed that the left side remained normal and she was now able to move the right hip and knee against resistance but still could not lift the leg. The knee jerk had returned. Sensory loss extended from T10-L4. The next day (42 hr after the block) the patient could stand up and walk unaided. Sensory loss was confined to L1-L2 on the right side. She was seen 3 hr later by a neurosurgeon (R.D.W.) who found minimal weakness of dorsiflexion and plantar flexion of the toes and diminution of hip flexion and knee extension. No specific reason could be attributed to her persistent weakness. She had recovered completely by that evening (50 hr) except for diminished sensation over the L1 area on the right thigh. Follow-up next day, nearly 72 hr after the last dose of bupivacaine, revealed no further abnormality. She has remained well since.

**DISCUSSION**

A complication which is disappointing to anaesthetists and obstetricians is a partially successful block such as occurred with this patient. Table I shows published reports of unilateral block after extradural analgesia and the explanations offered. Unilateral analgesia might be the result of the injection of the air used to locate the extradural space. Congenital soft tissue or bony barriers can be discounted because of the eventual spread of analgesia to both sides. The block spread to the right side after nearly 2 hr by which time any encysted air would have been absorbed. Since the block spread to the right side immediately after delivery, it is possible that the increased pressure in the extradural space from distended veins, relieved at that moment, enabled the local anaesthetic to spread to the originally unblocked side.

A catheter introduced apparently correctly may not follow the intended course (table II). It is possible that one catheter was in the left paravertebral space and the other in the right space, but if the prolonged duration of the block on the right was a result of perineural injection of bupivacaine, the onset of the block should have been very rapid.

It would seem that there is a small (4% or more) incidence of paravertebral exit of the catheter if it is advanced for 5 cm or more in the extradural space (10 cm from the skin).

The unilateral action is therefore explicable as the result of air injections, and paravertebral placing of the catheter or the drug, but the prolonged blockade is unusual. Massey Dawkins (1969) reported two cases of prolonged block in patients who were receiving anticoagulants. An extradural haematoma caused compression of the cord with bilateral signs. Recovery took place in one patient after 10 months but in the other paralysis was permanent. In our patient the residual blockade was unilateral, the return of function was steady, sustained and complete within 72 hr. The signs and course of the recovery exclude haematoma as a cause.

**TABLE I. Unilateral block after extradural analgesia and possible causes.**

<table>
<thead>
<tr>
<th>Author</th>
<th>Complication</th>
<th>Agents used</th>
<th>Explanation offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singh (1967)</td>
<td>Unilateral block (1)</td>
<td>Lignocaine 2%</td>
<td>Post-spinal adhesions</td>
</tr>
<tr>
<td>Shanks (1968)</td>
<td>Unilateral block (3)</td>
<td>Mepivacaine 2% with adrenaline 1:250,000</td>
<td>Paravertebral exit of catheter in one case and unilateral tracking of solution due to injected air in two cases</td>
</tr>
<tr>
<td></td>
<td>Unilateral block (1)</td>
<td>Lignocaine 1.5%</td>
<td>Unilateral tracking of solution due to injected air</td>
</tr>
</tbody>
</table>

**TABLE II. Course followed by extradural catheters as revealed by radiography.**

<table>
<thead>
<tr>
<th>Author</th>
<th>Distance of catheter tip from skin (cm)</th>
<th>Straight cephalad course (%)</th>
<th>Curling or winding (%)</th>
<th>Paravertebral exit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanchez et al. (1967)</td>
<td>20</td>
<td>48.6</td>
<td>45.5</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>12.5</td>
<td>40.5</td>
<td>52.5</td>
<td>7.0</td>
</tr>
<tr>
<td>Bridenbaugh et al. (1968)</td>
<td>15</td>
<td>--</td>
<td>96.0</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>13.5</td>
<td>82.0</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Spasm of the arteries supplying the nerve roots seemed unlikely because the paraesthesiae experienced by the patient on passage of the first catheter was not immediately followed by any sensory or motor manifestations and there was complete recovery. Indeed, in the absence of spinal fluid, paraesthesiae have even been used as an indication of a properly placed catheter (Flowers, Hellman and Hingson, 1949).

Analysing the world literature of 32,718 cases of extradural block for various procedures and local anaesthetics, Massey Dawkins (1969) reported on 48 cases (0.1%) of “transient” paralysis in which nerve block lasted for several months. Some instances were related to the use of adrenaline 1:80,000. He also found an incidence of 0.02% of permanent paralysis.

Prolonged block after bupivacaine has been reported previously. Downing (1969) described a patient who had numbness and weakness of the right foot and leg on the day after a perineal repair under extradural block with bupivacaine 0.25% and adrenaline 1:200,000. Steel and Massey Dawkins (1968), employing bupivacaine 0.5% with adrenaline 1:200,000, reported a patient with a small area of paraesthesia over the thigh 3 weeks after operation. The possibility of peripheral nerve damage was acknowledged.

In a series of 923 lumbar extradural blocks for labour, Crawford (1972a) reported one case of residual skin analgesia on the thigh lasting 6 weeks. Two more patients were reported with residual patches of numbness over the thigh lasting about 6 weeks (Crawford, 1972b). Both bupivacaine plain and with adrenaline had been employed. One of us (M.R.) has seen one patient who had sensory loss and weakness of the foot lasting 7 days; 18 ml of bupivacaine 0.5% plain had been used. It was accounted for as compression of the sciatic nerve.

Although it would seem attractive to connect the unilateral block, delayed onset of sensory and motor loss and long duration of action, we are unable to produce a satisfactory theory. It seems possible that the prolonged block of more than 60 hours was related to the use of bupivacaine (90 mg of bupivacaine 0.5% plain).

ACKNOWLEDGEMENTS

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REFERENCES


BLOCAGE PROLONGE AVEC RETABLISSEMENT APRES ANALGESIE EXTRADURALE POUR L'ACCOUCHEMENT

RESUME

Une patiente a manifesté un blocage prolongé après analgésie extradurale continue au cours de l'accouchement. Le blocage était unilateral, mais 60 minutes après un second blocage, on notait une perte motrice et sensorielle bilatérale. Il a fallu plus de 60 h pour que le côté non bloqué au départ soit totalement rétabli. L'agent d'anesthésie locale employé était 18 ml bupivacaine ordinaire à 0,5%.

LÄNGERER BLOCK MIT BEHEBUNG NACH EXTRADURALER ANALGESIE BEI WEHEN

ZUSAMMENFASSUNG

Bei einer Patientin kam es nach kontinuierlicher extraduraler Analgesie während der Wehen zu einem längeren Block. Der Block war unilateral, aber 60 min nach einem zweiten Block kam es zu einem bilateralen sensorischen und motorischen Verlust. Die ursprünglich unblockierte Seite konnte sich erst nach über 60 h völlig erholen. Das Lokalanästhesiemittel waren 18 ml 0,5%iges unvermischtes Bupivacain.

BLOQUEO PROLONGADO CON RECUPERACION DESPUES DE ANALGESIA EXTRADURAL PARA DOLORES DE PARTO

SUMARIO

Un paciente tuvo un bloqueo prolongado después de analgesia extradural continua en dolores de paro. El bloqueo era unilateral, pero 60 minutos después de un segundo bloqueo hubo una pérdida generadora y sensitiva bilateral. El original sin bloquear no se recuperó completamente hasta más de 60 horas. El agente anestésico local fue de 18 ml del 0,5% de bupivacaina ordinaria.