WARD-BASED EPIDURAL PAIN RELIEF

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Several studies have shown the benefits of using continuous epidural analgesia following major surgery. Because analgesia is so effective, patients are able to cooperate with physiotherapy. Kehlet⁽¹⁾ showed that effective pain relief using epidural analgesia allows early mobilisation and, in conjunction with good pre-operative information, leads to reduced hospital stay.

Until May 1997, patients in Lancaster who required epidural analgesia after surgery were nursed in the Intensive Care Unit (ICU) or the High Dependency Unit (HDU). When the patient returned to the general ward, the epidural had to be removed regardless of the effectiveness of the pain relief. Some patients were admitted to HDU primarily because of the epidural, which led to bed blocking and raised costs. Doctors and nurses were frustrated with this state of affairs, so the departments of surgery and anaesthesia decided to pilot a scheme of ward-based epidurals. In order to finance the service a business plan was prepared by Dr Vickers, detailing the financial requirements for the pilot study.

EQUIPMENT

Four Abbott Provider Machine (APM) infusion pumps were purchased: three with money from the Lancaster Acute Trust and one in memory of Phil Allen, the first pain specialist in Lancaster, from money donated following his tragic death. The system includes an infusion pump, an infusion set and a lock box that encloses the infusion mixture, which prevents any unauthorised interference.

The solution chosen for infusion was a low-dose opiate/local anaesthetic mixture. Local anaesthetics provide analgesia by blocking impulse transmission at the nerve roots and the dorsal root ganglia. Opiates produce analgesia by specific binding and activation of opiate receptors in the substantia gelatinosa in the dorsal horn of the spinal cord. A combination of opiate and local anaesthetic provides the optimum safe analgesia⁽²⁾. The low-dose solution minimises side effects from the local anaesthetic (such as motor block and retention of urine) and from opiates (nausea and vomiting and, more importantly, respiratory depression). The 250ml bags of fentanyl 2mcg/ml/bupivacaine 0.125% mixture are bought in bulk ready mixed from Royal Preston Hospital pharmacy. This is important as it reduces the time spent by nurses mixing solutions. The bags are completely sterile and have a long shelf life.

ENVIRONMENT AND EDUCATION

Ward 33 was chosen to pilot the scheme because a large number of major arterial and general surgical patients are nursed on this ward. Recognising that education is required

APM infusion pump

for both staff and patients in order to make the best use of the range of drugs and techniques available⁽³⁾, an intensive training programme was devised and delivered by the acute pain service shortly before the scheme began. All nurses, including night staff, who worked on the ward had to attend the training days. Guidelines and protocols were written, including the treatment of any side effects eg hypotension, high block etc.

The pilot scheme started in May 1997. All patients receiving epidural infusion analgesia were monitored 1 hourly – 4 hourly for the following:

- rate of infusion
- total volume infused
- dermatomal level (level of block)
- pain score

- pulse
- blood pressure
- respiration
- nausea and vomiting
- any other side effects

All pain scores listed are 24-hour scores (adding six four-hourly pain scores) and are based on a scoring system of:

- 0 = no pain at rest or on movement
- 1 = no pain at rest, slight pain on movement
- 2 = slight pain on rest, moderate pain on movement
- 3 = continuous pain at rest, severe pain on movement

The resultant 24-hour pain score, where a 24-hour score of 9 or less shows good pain relief, showed an average of 4, with a low of 0 and a high of 14. Figure 2 also shows that the majority of patients were elderly, and that in this group alone very satisfactory analgesia was achieved. Only one patient was aged under 30 and adequate analgesia was not really obtained. We regard this as an excellent outcome, demonstrating the efficacy of this method of post-operative analgesia

The average infusion rate was 5ml/hour, with a low of 2 and a high of 15.

Figure 2 Average pain scores and distribution of patients by age

DURATIONS OF EPIDURAL INFUSION

Of the 57 cases, the average time of the epidural infusion was 54 hours, with a low of four hours (an isolated case) and a high of 188 hours. There was a zero incidence of hypotension, respiratory depression or nausea and vomiting. These results are in line with national figures, including an audit of 1,763 patients at Blackpool Victoria Hospital.

As the ward-based epidural service continued, increased use was made of patient-controlled epidural anaesthesia (PCEA). It was generally acknowledged that PCEA was more effective in the majority of cases when using a lower background infusion with a bolus dose and a 15-minute lockout time (lockout means that a repeat dose cannot be given for a specified time). Both patients and staff expressed satisfaction with this system.

The acute pain service is hoping to extend ward-based epidurals to Ward 34, which is another major arterial and general surgical ward. The League of Friends has kindly donated money for one more APM pump, but funding is required for a further three pumps. If this becomes available, an intensive training programme will be undertaken for all nurses on Ward 34. This will be in line with the report from the Audit Office⁽⁴⁾, which looked at the provision of pain services and the amount of education given to nurses in post-operative pain management.

REFERENCES

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