Rural anaesthetic practices in the western Cape

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Summary

The findings of specialist anaesthetists on visits to rural towns in the western Cape over 6 years are reported. The importance of academic units communicating with general practitioners, nursing staff and hospital authorities in their own working environment is emphasised. Hospital anaesthetic facilities and general practice anaesthetic methods are discussed and recommendations made and, in addition, common problems that could improve anaesthesia in general practice are summarised.

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Medical schools have a responsibility to the community to ensure the continuing dispersal of new knowledge and the maintenance of safe practice.[1,2] Attendance at refresher courses is often difficult for general practitioners and journals are not always directly relevant to their situation.[2] Furthermore, the rational planning of a student training programme requires ongoing contact with rural practitioners in order to obtain detailed knowledge of the skills required in their environment.[3]

Since 1984 Tygerberg Hospital has sent a medical team to 13 provincial hospitals in the western Cape. Over a 6-year period, these hospitals were visited at least twice. The anaesthetic problems are very similar throughout the area and probably apply countrywide. Hence a discussion of the findings with regard to anaesthetic practice may prove helpful to practitioners and hospital administrators alike.

Anaesthetic environment

Theatres

All the theatres visited have good basic functional equipment and anaesthetic drugs suitable for simple adult anaesthesia. Standard blood pressure baumanometers, suction equipment, ECGs, inspired oxygen monitors, defibrillators and anaesthetic machines are always present.

Unfortunately the apparatus is often not fully understood. A good example of this was anaesthetic circuits and in particular the paediatric T-piece, which was found to be dangerously incorrectly assembled in 3 hospitals (the Jackson-Rees bag must be open ended), while the circle system was almost universally regarded with fear. This led to non-use of the circle system and resulted in poor maintenance, e.g. soda lime had not been renewed for over a year in 4 hospitals. The Magill system was greatly favoured, but was frequently misused at flows too low for controlled respiration.[4] With the ever-increasing use of newer and more expensive anaesthetic agents, low flows via circle systems are advised, but can only be safely used if the system is understood.

While ventilators were present in all the main theatres, there was little standardisation between hospitals and half the practitioners avoided using them. Resuscitation trolleys are always present with the required apparatus and drugs.

Recovery facilities are limited and recovery usually takes place in theatre or the theatre corridor. All of these areas have suction and oxygen available.

Anaesthesia

Safety of the patient was the overriding aspect.[5] The general practitioners were particularly careful in their approach to anaesthesia and took no risks they recognised. Potential problem cases are referred to larger centres. It was the unrecognised dangers that were worrying.

Premedication was usually by an intramuscular opiate or an oral benzodiazepine, while thiopentone remained the favoured intravenous induction agent. In the shocked patient, ketamine was favoured for induction and etomidate was used if it was suspected that the patient might have porphyria. Anaesthesia administered with a mask predominated for non-abdominal surgery and, regretfully, even for some abdominal surgery, for example caesarean section was performed with a mask in 3 hospitals before our visits — this practice has now stopped. Succinylcholine was commonly used to facilitate intubation but unfortunately cricoid pressure was seldom used effectively in patients who had a potential for the aspiration of gastric content.[6] Indeed, all of the hospitals visited, had some deficiencies with cricoid pressure. It is to be hoped that the visits have improved this easy and important manoeuvre.

Alcuronium was the favourite long-acting muscle relaxant but it was often incorrectly used, i.e. low dosage so as to decrease abdominal muscle tone, while the patient continued to breathe spontaneously (3 hospitals). Reversal was often not attempted at the termination of anaesthesia (4 hospitals). Hand ventilation was often used, in preference to available ventilators (most hospitals). On return visits we found that this dangerous misuse of muscle relaxants had stopped, but hand ventilation continued to be popular.

Anaesthetic maintenance was with nitrous oxide and oxygen 30 - 50% plus halothane 0,5 - 1%, often with supplemental intravenous thiopentone. Movement during surgery was generally accepted as the price to be paid for a light anaesthetic with a rapid recovery. Owing to the aim of a rapid recovery, intravenous opiates were not popular and the rural practitioner, in general, was very aware of the dangers of respiratory depression caused by opiates.

Postoperative analgesia was usually more successful than that found in academic units, almost certainly due to a closer doctor-patient relationship plus a better nurse-patient ratio.

Apart from a few enthusiasts, regional blocks were seldom performed. When a block was done, it was often with the misconception that it was safe in the presence of a full stomach or required less patient care than a general anaesthetic. An appreciation of the dangers and safety precautions required[7] was often lacking. This was evident in the nursing staff's distress over epidural blocks for labour in one or two hospitals where continuous attendance by a doctor was not available.

Laboratory facilities and intensive care

Generally, these were totally lacking and even basic investigations were often not done. Simple pre-operative investi-

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gations, such as measurement of the haemoglobin level and blood glucose concentration, can rapidly and easily be performed at the bedside. Modern apparatus does not require a skilled technician and, if warranted by demand, and finance is available, doctors can measure serum electrolyte values and do blood gas analysis themselves.

The lack of postoperative high-care units severely limits the type of surgery possible. Graaff-Reinet Hospital is an excellent example[5] of what can be achieved when the local medical and business community liaise to equip such a unit.

Discussion

The aim of specialist visits to peripheral areas is to experience the professional environment of the general practitioner.[1-3] This allows one to make suggestions to ensure safe practice and to adjust established procedures, as necessary.[1] Overemphasis on the latest specialist techniques is to be avoided as the facilities are often not available, e.g. alcuronium is available but not atracurium or vecuronium. Single visits are inadequate and follow-up is essential to reinforce ideas and to continue contact with the local practitioners, since this communication could encourage them to contact the regional specialists to discuss difficult cases before surgery is performed.

Few practitioners have any formal anaesthetic training and self-taught methods are common. Hand-me-down methods from older colleagues are frequently used, leading to the perpetuation of potentially dangerous habits, such as caesarean section with mask anaesthesia and general anaesthesia composed of repeated thiopentone injections. This impression is further substantiated by the observation that in towns where one of the practitioners has an anaesthesia diploma, standards are noticeably better.

A common problem is that those rural practitioners who read about new techniques in journals feel that they do not have the specialist back-up or hospital facilities to institute them. Attendance at refresher courses is a difficult option,[3] it is earning-time expensive as well as practically difficult for small practices to spare a partner for regular courses. This problem is borne out by the experience of many teaching-unit refresher courses where the same dedicated faces show up year after year. Getting the specialist to the practitioner is more likely to result in effective changes in practice and the efficacy of this is well demonstrated in the cessation of the misuse of anaesthetic circuits that commonly occurred before our visits.

Fairly complicated apparatus, such as ventilators, have arrived at hospitals without anyone to instruct the local practitioners in their use; the result is that these machines are not used and are a waste of money. The practitioners rightly feel that the authorities should ensure a proper demonstration of the machine on arrival; this could possibly best be done by a specialist anaesthetist rather than a company salesman who lacks clinical insight.[8] We foresee that, as modern equipment becomes more complicated, this problem may be aggravated. Furthermore, complicated equipment requires expert servicing and 'in-house' repairs can be dangerous.[9] For instance, several Ambu bags were found to have incorrect valve assemblies and in one labour ward an Entonox cylinder had a potentially life-threatening incorrect demand-valve assembly on the mask.

Communication with the two anaesthetic departments in the western Cape was initially reported to be difficult and this may be a national problem. Practitioners complained that it took 15 - 30 minutes to get through to relevant personnel in these departments, frustrating at the best of times and certainly unacceptable in emergencies. Often the anaesthetist failed to identify himself and the practitioner would get the impression he was talking to a registrar with sufficient theoretical knowledge rather than an experienced consultant. Misconception or not, it caused justified dissatisfaction. These problems have largely been ironed out now, since both departments in the western Cape have new telephone exchanges and rapid radio access to a consultant. Factors, which from various discussions with practitioner colleagues appear to be important in telephonic access to a specialist, are: (*i*) rapid and easy access to a specialist — preferably a direct line avoiding the hospital exchange; (*ii*) 24-hour service; (*iii*) a simple comprehensive explanation of how to approach the problem; (*iv*) sympathetic handling — as a colleague; and (*v*) ability to refer patients.

The nursing staff suffer even more than the medical profession from separation from the mainstream of ongoing medical education.[2] All the hospitals are short of staff and find it difficult to send staff on refresher courses and hence the understanding of background physiology and pharmacology is limited. Good examples of this are the lack of understanding of the necessity for cricoid pressure and antacids for anaesthesia for caesarean section.

The concept of anaesthesia being a critical care situation rather than a patient who is simply 'asleep' is also poorly understood by the nursing staff[9] with the result that often recovery and post-anaesthetic ward care is poorly managed. By visiting the rural hospitals these problems can be addressed.

To summarise, we can highlight five particular problems which need to be addressed on a continuous basis:

1. Danger of hypoxia because of the uncertainty in the use of ventilators. Routine pulse oximetry would greatly help.
2. Incorrect use of muscle relaxants. Spontaneous ventilation is unacceptable when *any* dose of a muscle relaxant is used. Routine use of reversal agents is essential in order to reverse the non-depolarising muscle relaxants.
3. Intubation is essential for all body cavity surgery. It is advantageous in most other procedures other than short anaesthetics on healthy patients.
4. Awareness is a potential problem during light anaesthesia[10] and it should be remembered that proper surgical anaesthesia is associated with less endocrine and cardiovascular stress. There is hence little justification for a 'light anaesthetic'.
5. Cricoid pressure, correctly applied, is essential for all patients with the potential of regurgitation, including those undergoing caesarean section.

Finally, we have a number of specific suggestions for hospital administrators at both the smaller regional hospitals and at teaching units, which may improve the anaesthetic service in their region: (*i*) organised visits by specialists are effective in helping to improve standards; follow-up visits are essential; and administrators should encourage this as much as possible; (*ii*) equipment, e.g. ventilators, must be adequately demonstrated to the doctor before he or she can safely use it; (*iii*) proper equipment servicing is essential — this applies to simple things, such as Ambu bags, as well as more complicated equipment; (*iv*) academic units must make access for the general practitioner seeking advice rapid and easy; and (*v*) the nursing staff must always be included in these programmes as they are an integral and important part of the quest for patient care and safety.

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