Lesson of the Week

Adult epiglottitis

STEPHEN P GERRISH, ANDREW S JONES, DUNCAN M WATSON, RICHARD G WIGHT

Acute epiglottitis is well recognised in children. In adults the condition is comparatively rare but the outcome may be equally serious. We present four cases emphasising the importance of early consideration of the diagnosis in adults with relatively common symptoms and recognising the necessity for urgent action in airway management.

Case histories

Case 1—A 43 year old previously fit man presented to the accident and emergency department with a history of sore throat, fever, and increasing dysphagia for five days and respiratory difficulty for the past hour. On admission he gave his own history; he was feverish and had pharyngitis and mild stridor. One hour after admission he was transferred to the ear, nose, and throat ward for assessment, where he was still able to talk and give his own history. His only treatment at that stage was humidified oxygen. Soon after arrival in the ward he developed complete upper airway obstruction and suffered a hypoxic cardiac arrest. Laryngoscopy showed an immense red, swollen epiglottis with no other recognisable laryngeal structure consistent with a diagnosis of acute epiglottitis. Oral intubation was impossible, and a minitracheotomy tube (Mini-Trach, Portex) was inserted through the cricothyroid membrane followed by a conventional emergency tracheostomy. Despite full cardiorespiratory resuscitation it became evident that the patient had suffered irreversible cerebral hypoxia during this period, and 48 hours later the criteria for brain stem death were fulfilled.

Case 2—A previously fit 57 year old man drove himself to the accident and emergency department and gave a history of increasing dysphagia and mild dyspnoea for four hours. He sounded hoarse, and 20 minutes after arrival inspiratory stridor became evident. Indirect laryngoscopy by an ear, nose, and throat surgeon showed epiglottitis and he was taken directly to the theatre. With an ear, nose, and throat surgeon present, he was anaesthetised with halothane in oxygen. Laryngoscopy confirmed severe epiglottitis and showed pronounced deformity of the laryngeal anatomy. The first attempt at intubation failed and a bronchoscope was therefore passed through the cords allowing a bougie to be inserted; this was used to guide the insertion of a 7.5 mm endotracheal tube, which was subsequently changed to a nasotracheal tube. Intravenous chloramphenicol and metronidazole were begun and the patient transferred to intensive care, where he was sedated with fentanyl and midazolam, spontaneously breathing humidified 30% oxygen. His fever settled and resolution of the epiglottic oedema was monitored regularly using the fiberoptic laryngoscope. Four days after admission the laryngeal anatomy appeared normal and the patient was extubated. He made a rapid and complete recovery. Throat swab culture grew a non-haemolytic streptococcus.

Adult epiglottitis is rare but appears to be on the increase; though it is completely curable, any delay in diagnosis and treatment may result in sudden, potentially fatal respiratory obstruction

Case 3—A previously fit 16 year old youth presented to the accident and emergency department with a six hour history of increasing dyspnoea and inspiratory stridor. Temperature was 38°C, there was inspiratory stridor, and he was slightly cyanosed. Indirect laryngoscopy showed severe supraglottic oedema predominantly affecting the epiglottis. He was transferred to the theatre and anaesthesia induced with halothane in oxygen. A nasotracheal tube was passed and bacterial swabs taken from the larynx. On transfer to the intensive care unit he was allowed to breathe humidified oxygen spontaneously. Intravenous chloramphenicol and metronidazole were begun and resolution of the disease monitored with the fiberoptic laryngoscope. Three days after admission his larynx had returned to normal and he was extubated, thereafter making an uneventful recovery. Laryngeal swabs grew *Haemophilus influenzae*.

Case 4—A previously fit 51 year old man was admitted from the accident and emergency department with a three hour history of increasing stridor, dysphagia, and discomfort in the throat. On arrival in the ear, nose, and throat ward he was well enough to give his own history. Examination showed a mild fever (37.4°C) and moderate stridor, and indirect laryngoscopy disclosed generalised supraglottic oedema. Throat swabs were taken and treatment began with chloramphenicol, metronidazole, hydrocortisone, and humidified oxygen. One hour later he rapidly deteriorated with increasing stridor and cyanosis and was transferred to the theatre. He was anaesthetised with halothane in oxygen and had a nasotracheal tube inserted. On transfer to the intensive care unit he required intermittent positive pressure ventilation for 24 hours but thereafter breathed humidified oxygen spontaneously. Progress was monitored with the fiberoptic laryngoscope and at 96 hours his larynx had returned to normal. He was extubated and made an uneventful recovery. No organisms were cultured.

Discussion

Acute epiglottitis was first described by Thiersen in 1900.¹ Initially it was regarded as a rare childhood condition, but in 1967 it was reported in adults,² and adult cases appear to have increased since then.³ Respiratory obstruction appears to be a combination of swelling of the epiglottis and arytenoepiglottic folds, which leads to a narrowed supraglottis, and the presence of thick secretions. Sudden respiratory arrest is caused by plugging of the narrowed airway with secretions.

Adults are thought by some workers to be at less risk of airway obstruction.⁴ Mayo-Smith *et al*, however, emphasised that adults are at risk of sudden airway obstruction without any previous deterioration, two of the deaths that they reported being very similar to that in our case 1.³ They also confirmed that the risk of airway obstruction exists early in the disease, all the deaths in

Departments of Anaesthesia and Otolaryngology, Royal Hallamshire Hospital, Sheffield S10 2JF

STEPHEN P GERRISH, FFARCS, senior registrar in anaesthesia
ANDREW S JONES, MD, FRCS, senior registrar ear, nose, and throat surgeon
DUNCAN M WATSON, MB, CHB, registrar in anaesthesia
RICHARD G WIGHT, FRCS, registrar ear, nose, and throat surgeon

Correspondence and requests for reprints to: Dr Watson.

their series occurring before or within six hours after admission. This emphasises the requirement for early recognition and urgent treatment. Indirect laryngoscopy is safe in adults³ and in experienced hands is the diagnostic method of choice.

In children the use of an artificial airway is part of the standard treatment but in adults this is not necessarily so; and opinion differs about the requirement for an artificial airway in all cases.⁵ In roughly half of the cases in adults the patients have severe dyspnoea, and many of these will improve with humidified oxygen and intravenous antibiotics. The remainder may require rapid airway intervention by an experienced anaesthetist and ear, nose, and throat surgeon, with subsequent observation in a high dependency area. It is frequently difficult to pass an endotracheal tube through the distorted supraglottic anatomy and it may be easier to pass a

bronchoscope (case 2), or an urgent tracheostomy may be required. These cases illustrate that adult epiglottitis is a lifethreatening condition and may require rapid airway intervention.

References

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(Accepted 26 August 1987)

For Debate . . .

In vitro fertilisation: legislation and problems of research

KAREN DAWSON

The recent publication of a consultation paper by the Department of Health and Social Security about human infertility services and research on embryos¹ indicates that the recommendations of the Warnock report on human fertilisation and embryology may soon form the basis of legislation to regulate research on embryos and in vitro fertilisation in Britain.² It is therefore timely to consider some of the problems that arise from enacting such legislation.

In August 1986 the Infertility (Medical Procedures) Act 1984, based on the recommendations of a committee chaired by Professor Louis Waller,³ was partially proclaimed in the Australian state of Victoria. This act was the first in the world that regulated in vitro fertilisation and research on embryos, and it is important to examine the effects of the legislation and consider any problems it has created so that future legislation elsewhere may be drafted with these in mind.

The intention of both the legislation and the Warnock report was to preserve existing clinical in vitro fertilisation programmes but to control their future direction and development by establishing a monitoring body with discretionary powers over research. For a biomedical scientist working in this research how realistic is this aim? Problems might arise concerning, firstly, the effects of the legislation on current research; secondly, its implications for clinical practice; and, thirdly, its ramifications for future progress. The act is now partially in force in Victoria, as is its monitoring body, the Standing Review and Advisory Committee; this provides the opportunity of examining the possible problems from the scientist's point of view.

Effects on current research

FREEZING OF OVA

Current research in Victoria is already being affected by the act, particularly research concerning the freezing of human ova. This technique was developed in Victoria in 1985,⁴ and its continued development was encouraged by the Waller committee as a possible means of sidestepping the ethical problems of freezing embryos.⁵ This encouragement is also evident in the act: "Nothing in this Act prevents or inhibits . . . the development of techniques for, freezing or otherwise storing ova."

Cryopreservation of ova entails removing the follicular cells surrounding the egg, immersing it in a cryoprotectant, and freezing it in liquid nitrogen at -196°C for storage. At present about three quarters of eggs survive the freeze-thaw process,⁶ but animal studies indicate that the incidence of chromosomal abnormalities in embryos grown after fertilisation of eggs stored in this way is greatly increased.⁷ It is not known if human ova are similarly affected, and scientists believe that the possibility should be investigated before the procedure is made available to patients—a requirement also mentioned in the Warnock report.² To do this some human eggs must be frozen, thawed, and fertilised, so that the incidence of abnormalities in the zygote and early cleavage stages can be estimated.

In accordance with the requirements of the act,³ permission to undertake such research was sought from the Standing Review and Advisory Committee, but it was refused on the grounds that to consider such an experiment was outside the jurisdiction of the committee. The committee also stated that to allow this experiment would be in breach of as yet unpublished provisions of the act that specify that: "Where ova are removed from the body of a woman, a person shall not cause or permit those ova to be fertilised outside the body of the woman except for the purposes of the implantation of embryos derived from those ova in the womb."⁸ The two sections cited seem to be in conflict with each other. Furthermore, the latter section also seems to be in conflict with the traditional development of scientific research; the development of any freezing technique requires subsequent assessment by controlled experiments. Failure to gain such approval from the committee has left the researchers with a dilemma: to test whether it is possible to fertilise the ova after thawing and produce embryos that survive and form normal chromosomes is illegal, but to offer the procedure to women knowing that there may be an increased risk of spontaneous abortions in the first trimester or of the need for a therapeutic abortion after amniocentesis in the second trimester is both unethical and irresponsible.

Centre for Human Bioethics, Monash University, Clayton, Victoria, Australia 3168

KAREN DAWSON, PHD, scientific research officer