Behaviour modification

According to the theory of "operant conditioning," a response to a situation changes according to its consequences for the person concerned.

Example of how operant conditioning can maintain sleep problems

Take the situation of the child who is put to bed, and 10 minutes later gets up and joins the parents. The likelihood of the child's behaviour being repeated will depend on what happens next. A consequence which is experienced by the child as desirable (such as increased parental attention) will encourage repetition. A consequence which is not experienced as desirable (such as being promptly returned to the bedroom) will not have this effect. The parents may therefore modify the child's behaviour by avoiding rewarding behaviour that they find undesirable, and instead rewarding that which is wanted. In this case the parents should not only avoid rewards for getting up at night, but they should also institute rewards for staying in bed until morning. Inevitably, this is an extreme oversimplification of a much more complicated picture. It is, however, one which often permits effective action.

stars are earned for specified behaviour such as going to bed on time, staying in bed, and not calling out. Children should not be required to do things that are beyond their control, such as going to sleep at a particular time.

Studies have shown that these programmes are extremely effective if implemented fully and conscientiously, but many parents find them difficult to put into practice. Time should therefore be spent in planning, discussing possible difficulties, and devising strategies to overcome them. Some may find it easier to change their own and the child's behaviour in small steps, progressively decreasing the time before a child who gets up is put back to bed, or the number of stories read, and so on. The initial "testing out" period is particularly strenuous for parents. They need to understand that the child is trying to re-establish the old routine, so if they waver it will increase the child's attempts to return to the old pattern.

If behavioural management proves unsuccessful, or the sleep disorder is part of a wider problem, an alternative approach may be indicated. This is likely to require the participation of child mental health services and may include psychological assessment and treatment of one form or another with the child and perhaps the parents as well. Drugs to induce sleep are likely to be of only temporary benefit and should seldom be used in children

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The ABC of Sleep Disorders has been edited by Professor Colin M Shapiro.

Lesson of the Week

Late presentation of traumatic rupture of the diaphragm in a child

George Ninan, Prem Puri

Rupture of the diaphragm caused by blunt trauma is an uncommon injury in children; the condition may present late, so a high degree of awareness is essential for prompt diagnosis

Rupture of the diaphragm due to blunt trauma is uncommon.¹ Late presentation of such an injury is well recognised in adults² but exceptionally rare in children.³ Lack of awareness of late presentation of traumatic rupture of the diaphragm in children may result in a delay in diagnosis.

Case report

A 7 year old boy was admitted as an emergency case after falling from the side of a lorry. He was alert and neurologically normal with a Glasgow coma score of 14 on admission. He was haemodynamically stable but had a few episodes of haemoptysis, and there was macroscopic haematuria. Positive findings were decreased air entry in the right lower chest and a distended abdomen with tenderness and guarding, mainly in the suprapubic region. He was resuscitated and monitored along the lines of trauma management described by the American College of Surgeons.⁴ A chest x ray picture showed right sided pulmonary bruising, and an abdominal film showed a fracture through each pubic ramus. Ultrasound study of the abdomen showed free fluid in the peritoneal cavity and a right perirenal collection of fluid but normal kidneys, liver, spleen, and bladder. He was managed conservatively, the fractured pelvis being treated by rest in bed. He recovered rapidly. Three days after admission ultrasonic appearances in the abdomen were normal. He continued to improve and was discharged home 11

days after admission. At discharge, when he was fully well, he was eating normally and had no clinical abnormality in chest or abdomen. A radiograph of the chest was reported on as normal (figure).

Eighteen days after discharge from hospital he was readmitted as an emergency complaining of epigastric pain and vomiting for 24 hours. On examination he looked pale and dehydrated. He was in no obvious respiratory distress but the chest sounded dull on percussion and there was decreased air entry on the left. A chest x ray picture showed features interpreted as consolidation of the left lower lobe with a left sided pleural effusion (figure). A provisional diagnosis of staphylococcal pneumonia was made. He was treated with intravenous fluids and antibiotics.

Eight hours after admission he suddenly deteriorated, with severe respiratory distress and increasing left chest signs. Review of the chest x ray picture suggested post-traumatic diaphragmatic hernia, which was confirmed by ultrasound examination. During transfer to the intensive care unit he suffered a cardiac arrest which necessitated 20 minutes of cardiopulmonary resuscitation to establish a normal cardiac rhythm. At laparotomy, performed after a period of attempted stabilisation, the whole of the stomach and omentum was found to have herniated into the left hemithorax. The hugely distended stomach had to be decompressed before it could be returned back into the abdomen, and the defect in the left hemidiaphragm (6×5 cm) was repaired with 2-0 silk sutures. He had an

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Chest x ray appearances on discharge from hospital after initial admission (top) and 18 days later on readmission (bottom)

unstable postoperative course with further neurological deterioration, culminating in brain death 48 hours postoperatively.

Comment

The incidence of diaphragmatic rupture due to blunt trauma is increasing^{1,5} concomitantly with the increase in the number of motor vehicle accidents.⁶ Mortality ranges from 20% to 40% in series in adults^{7,8}; the figures for children are similar.⁵ Though some of the deaths may be attributed to associated severe injuries,⁸ a delay in diagnosis contributes to the high mortality. In our patient the diagnosis was delayed by eight hours, with a fatal outcome.

Several factors are described as contributing to the diagnostic delay—presence of serious concurrent injuries and paucity of pathognomonic clinical signs; simultaneous lung injuries may mask or mimic the diagnosis radiologically.⁹ Our patient sustained blunt thoracoabdominal trauma severe enough to cause intra-abdominal bleeding, pelvic fracture, and pulmonary bruising but there was no clinical or radiological evidence of diaphragmatic injury during the initial admission. In many adult trauma centres exploratory laparotomy is an essential part of complete evaluation of the patient, and these centres have a lower incidence of missed diaphragmatic injuries.⁸ Had our patient been subjected to an exploratory laparotomy during the initial admission the diaphragmatic tear would have been diagnosed at that time. But in children the management of haemoperitoneum and injury to solid abdominal viscera is generally conservative. The advantages are avoidance of unnecessary operations and preservation of vital organs like spleen, resulting in reduction of morbidity and mortality in the short and long term.¹⁰ During the second admission the clinical and radiological features of air and fluid in the left hemithorax were misinterpreted as staphylococcal pneumonia. Above all, a high index of suspicion, essential for prompt diagnosis of diaphragmatic injuries,¹¹ was not present when the patient was readmitted. This was at least partly due to the lower incidence of diaphragmatic injuries in children.

In an era of increasing motor vehicle accidents involving children a high degree of awareness of traumatic rupture of the diaphragm and the possibility of late presentation is essential for prompt diagnosis and the consequent reduction in morbidity and mortality.

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ANY QUESTIONS

The makers of children's shoes would have us believe that wearing even slightly ill fitting shoes in childhood can damage the feet. Similarly, wearing shoes previously worn by other children is meant to be harmful. Is there any evidence for these beliefs?

A shoe should be comfortable and fit the foot without unduly distorting it. It seems sensible to take care with the fitting of children's shoes so that the growing foot is not distorted in any way. I have no evidence that even slightly ill fitting shoes in childhood can damage the feet, but I suspect that they would have to be very uncomfortable to have an adverse effect. The most likely part of the foot to

be affected would be the forefoot, particularly the toes. The disadvantage of wearing shoes that have previously been worn by other children is that each individual tends to mould shoes into a particular pattern. I have not come across any scientific evidence that wearing even slightly ill fitting shoes in childhood can damage the feet, but it does seem logical to fit children whose feet are growing with shoes that are comfortable. Ill fitting shoes producing forefoot symptoms seem to be the problem of teenage girls in particular, where fashion rather than comfort dictates which shoe to wear. —LESLIE KLENERMAN, head of department of orthopaedic and accident surgery, University of Liverpool