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SHORT REPORTS

Aspiration around high-volume, low-pressure endotracheal cuff

Evidence suggests that low-pressure, high-volume endotracheal tube cuffs may permit leakage of material past them.^{1,2} Studies performed on dogs' tracheas and on glass tubes used as models of the human trachea showed that liquid passed around folds in the cuff.³ We report a case in which material tracked around the folds in a high-volume, low-pressure cuff that was properly inflated.

Case report

A 65-year-old man had undergone resection of the middle third of his oesophagus because of carcinoma; his condition deteriorated after the operation and he was admitted to the intensive therapy unit, where he was intubated with a 9 mm Mallinckrodt Hi-Lo oral endotracheal tube and intermittent positive-pressure ventilation was started using a Cape ventilator. The next day he was placed in the sitting position and barium was inserted into his upper oesophagus to test oesophageal anastomosis. A chest x-ray film showed that barium had spilled over into the oropharynx and tracked around the folds of the inflated cuff into the trachea and left main bronchus (figure).

Aspiration around a low-pressure, high-volume cuff.

The cuff pressure had been checked routinely and was 18 cm water, which is within the recommended range; there was no audible leak during the inspiratory phase of ventilation. The peak inspiratory pressure was 24 cm water and the expiratory pressure atmospheric. The patient himself was making no inspiratory effort.

Comment

The advantages of high-volume, low-pressure cuffs over low-volume, high-pressure cuffs are well established.^{4,5} In the intensive therapy unit at this hospital low-pressure, high-volume cuffs are used exclusively. Patients are clearly at risk, however, if material is allowed to collect in the oropharynx. Frequent sucking out to maintain a clear oropharynx is essential. Our case serves as evidence that material may track around the folds of a cuff which is being maintained at a pressure that is assumed to be safe. We would agree with Bernhard *et al*² that a

compromise may be needed, so instead of using the lowest inflation pressure at which no leak can be detected audibly a pressure of 25 cm water should be used routinely. This pressure will confer the benefits of low-pressure, high-volume cuffs but the possibility of aspiration will be reduced.

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Division of Anaesthesia and Intensive Therapy Unit, Western Infirmary, Glasgow

WILLIAM MACRAE, MB, FFARCS, senior registrar
PETER WALLACE, MB, FFARCS, consultant

Laburnum "poisoning"

Occasionally there are alarming accounts in the press or on the radio or television to the effect that a small child has eaten laburnum seeds and been rushed as an emergency to hospital, presumably in dire danger. The outcome is seldom heard. Understandably, the laburnum has come to be regarded toxicologically as an ogre, and representations are often made to have such trees felled and destroyed wherever children are likely to come into contact with them.

What is the authority for this view? According to *British poisonous plants*,¹ an invaluable bulletin issued by the Ministry of Agriculture, Fisheries, and Food, "After the yew tree, the laburnum is the most poisonous tree grown in Britain; all parts of it are toxic, the wood, bark and roots being consistently so throughout the year. . . ." The bulletin goes on to declare that, "Numerous cases are recorded of laburnum poisoning of human beings who have eaten the flowers or seeds, or who have carried twigs or bunches of flowers in their mouths. The features are dilatation of the pupils, stomach pains, vomiting, giddiness, weakness, coldness of the limbs, incoordination, and death from asphyxia." Lampe and Fagerstrom² give an even more horrifying clinical description. Thus it was only to be expected that the National Poisons Information Service should annotate its index accordingly and prepare for the worst whenever a call was received about this plant. We investigated the outcome of suspected laburnum poisoning in children in 1979.

Patients, methods, and results

During 1979 all inquiries received from doctors about suspected laburnum poisoning were carefully recorded and followed up. Among 49 cases, comprising 20 children under 5 years and 29 aged from 5 to 12, no symptoms were found in 34. Among the remainder the symptoms were nausea and vomiting (12 cases), abdominal pain (seven), sore mouth (three), drowsiness (two), delirium (two), and diarrhoea (one). The duration of symptoms was