

ENDGAMES

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CASE REVIEW

A puzzling airway problem

A fit and well 11 month old girl who was living with her single mother and 3 year old brother presented to the emergency department with acute shortness of breath and cough. Her mother had not witnessed any episodes of foreign body inhalation. A diagnosis of bronchiolitis was made and the child was discharged after oxygen therapy and observation. One week later she presented with the same symptoms and signs. Chest radiography was performed and was reported as normal. Again she was diagnosed and treated for bronchiolitis and made a complete recovery.

Six weeks after the initial presentation she re-presented with a two day history of increasing shortness of breath, cough, and stridor. Signs of respiratory distress were noted, and chest auscultation identified bilateral wheeze and transmitted upper airway noises. Her symptoms improved with salbutamol and adrenaline nebulisers, but an apparent stridor remained. A repeat chest radiograph during this time was also normal.

She was admitted and treated with nebulisers, oxygen, and steroids. Her symptoms improved but did not resolve completely. An ear, nose, and throat nasoendoscopic examination showed a normal epiglottis, but no clear laryngeal views were obtained. Again the mother denied any witnessed aspiration of a foreign body but reported that her two children sometimes played together unsupervised.

- 1 What is your working differential diagnosis?
- 2 Would you expect radiological imaging to provide definitive proof of the diagnosis?
- 3 How would you investigate this patient further?
- 4 What are the complications of this presentation?

Submitted by R C Costello, C R Whittet, and ST Browning
Parental consent obtained.

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STATISTICAL QUESTION

What is significance?

The effects of pelvic floor muscle training on pelvic floor symptoms were investigated using a randomised controlled trial. The intervention consisted of pelvic floor muscle training combined with home exercises. The control intervention consisted of watchful waiting. The length of follow-up was three months. The participants were women recruited from a primary care population, aged 55 years or more, who had symptomatic mild pelvic organ prolapse.

The primary outcome was the change in bladder, bowel, and pelvic floor symptoms at follow-up from baseline as measured by the Pelvic Floor Distress Inventory-20 (PFDI-20). Higher scores on the inventory indicated a greater severity of symptoms. To calculate the required sample size it was assumed that the watchful waiting group would have a PFDI-20 score of 60 points at baseline with no subsequent change in symptoms at three months. The sample size was based on having 80% power to detect a difference between treatment groups of 15 points (25% reduction) in the PFDI-20 score, with a standard deviation of 36 points at three month follow-up. To achieve this difference using a critical level of significance of 0.05 and two sided alternative hypothesis, 92 women were needed in each treatment arm. To account for an estimated dropout rate of 15%, the required sample size was adjusted to 216.

In total, 287 women were recruited and randomised to pelvic floor muscle training (n=145) or watchful waiting (n=142). Overall, 250 (87%) women completed follow-up. At the end of follow-up the intervention group had a significant improvement in symptoms compared with the watchful waiting group, with an average reduction of 9.1 (95% confidence interval 2.8 to 15.4; $P=0.005$) points on the PFDI-20.

Which of the following statements, if any, are true?

- a) The proposed difference between treatment groups of 15 points on the PFDI-20 used to calculate the sample size was the smallest effect of clinical interest
- b) The intervention would be considered clinically effective if the intervention group had an improvement in mean PFDI-20 score of 15 points or more compared with the control group
- c) Because the difference between treatment groups in the primary outcome was statistically significant, it can be inferred that pelvic floor muscle training was clinically effective
- d) The trial was overpowered for the statistical test of the difference between treatment groups in the primary outcome

Submitted by Philip Sedgwick

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ANATOMY QUIZ

High resolution axial computed tomogram of the ear

Identify the structures labelled A, B, C, D, E, F, and G in this axial computed tomogram of the ear.

Submitted by Ming-Hua Zheng and Ke-Hua Pan

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