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Recent rise in bacterial tracheitis hospital admissions in children in Northern Ireland

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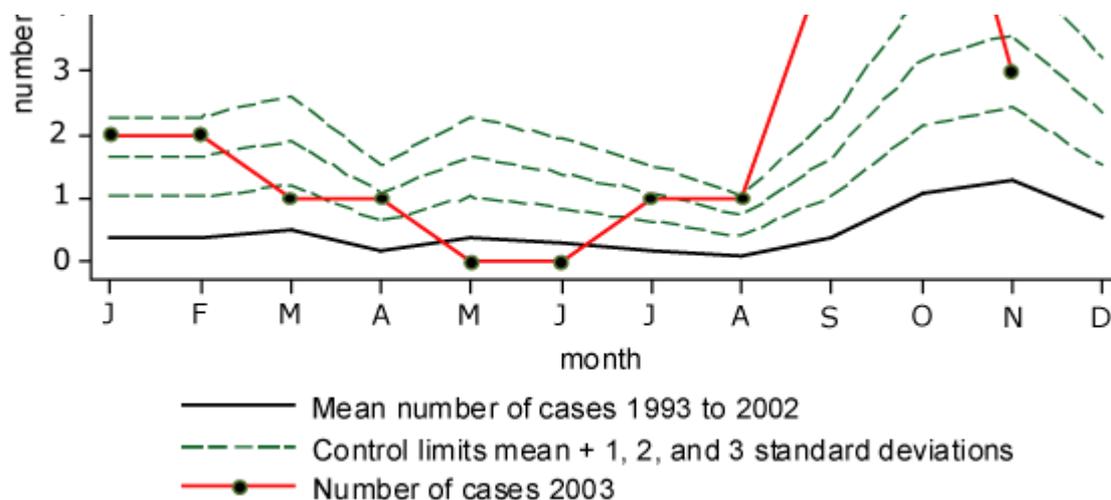
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During October 2003, a rise in admissions of bacterial tracheitis to the sole regional paediatric intensive care unit (PICU) in Northern Ireland was noted, which coincided with increasing influenza-like illness and influenza A activity among the paediatric population, and an epidemiological investigation was begun.

For the purposes of the investigation, a confirmed case was defined as a child (aged <8 years) admitted to PICU since 1 September 2003 with breathing difficulties and tracheal inflammation confirmed by bronchoscopy. Seventeen children met the case definition by 30 November. This incidence during the three month period was significantly in excess of that noted in the previous ten years from the hospital database (Figure). Patients initially presented to different hospitals around the region with barking cough (100%), breathing difficulty (100%), inspiratory stridor (88%) and high fever (75%). They did not respond to the usual nebulised steroid treatment for viral croup infection and required intubation. Thick bronchial secretions were evident and bronchoscopy showed erythema (100%) and pus (88%) in the trachea.

Figure. Excess number of cases of bacterial tracheitis by month, Northern Ireland, 2003 (statistical process control chart for bacterial tracheitis). Source: CDSC.





Of the 17 cases, ages ranged from 7 months to 8 years, but most of the children (69%) were under two years old. Eleven were boys and six were girls. They lived in different parts of the region with no evidence of geographic clustering. Most (69%) had no significant medical history without underlying illnesses and did not belong to high risk groups for influenza infection. Four of the children were reported to suffer from chronic diseases (one suffered from asthma, one from chronic otitis, one from recurrent urinary tract infections and one from febrile seizures). The median duration of illness before hospital attendance was 24 hours, ranging from 12 to 48 hours indicating rapid progress of the disease. All patients fully recovered.

Bacterial cultures from bronchial secretion specimens taken on admission from 15 of the 17 cases identified different bacteria (including *Moraxella catarrhalis* (n=2), *Streptococcus pneumoniae* (n=2), Gram positive cocci (n=2), *Staphylococcus* spp. (n=2), *Haemophilus influenzae* (n=1), group A streptococcus (n=1), *Streptococcus sanguis* (n=1)), while four were culture negative and two were not available (Table). Of the seven cases that were tested by PCR for viruses, two were negative, one was positive for influenza A (H3), one for rhinovirus, one for picornavirus, and two for parainfluenza type 2. Parainfluenza type 2 had not been isolated in Northern Ireland for almost ten years.

Table. Organisms and viruses identified in patients with bacterial tracheitis, PICU, Belfast September–November 2003

Case ID	Organisms	Viruses
1	<i>Staphylococcus</i> (unspecified)	Not sent
2	Gram+ cocci (unspecified)	Negative
3	<i>Staphylococcus aureus</i>	Not sent
4	<i>Streptococcus pneumoniae</i> (blood culture)	Not sent
5	Not available	Not sent
6	<i>Streptococcus pneumoniae</i>	Not sent
7	<i>Moraxella catarrhalis</i>	Not sent
8	Gram+ cocci (unspecified) (few)	Parainfluenza 2
9	Negative	Parainfluenza 2

Influenza A

10	<i>Haemophilus influenzae</i>	Influenza A (H3)
11	Negative (on admission), <i>Klebsiella</i> (4 days later)	Not sent
12	Negative	Not sent
13	<i>Streptococcus sanguis</i>	Rhinovirus
14	<i>Moraxella catarrhalis</i> (on admission), <i>Staph. aureus</i> (later)	Negative
15	Streptococcus group A	Not sent
16	Negative	Picornavirus
17	Not available	Not available

Tracheitis is a rare bacterial infection of the trachea capable of producing airway obstruction and potentially life threatening (1). It is most common in young children, possibly because a child's smaller trachea is easily obstructed by inflammation. The disease can be caused by a variety of bacteria, with no single pathogen being predominant. It is usually preceded by a recent viral respiratory infection (2). Most patients present with acute onset of respiratory distress, fever, toxicity, and stridor after a prodrome of upper respiratory tract infection lasting a few days (3). This condition may rapidly progress and the standard croup treatment is ineffective. Tracheitis requires hospitalization and, almost always, endotracheal intubation. The diagnosis is based on endoscopic findings of tracheal inflammation and should be suspected if a child with croup-like symptoms does not respond to conventional therapy.

The observed increase in bacterial tracheitis may reflect recent increased influenza and viral activity observed this season. Increased awareness of bacterial tracheitis in children is therefore important. Advice and information on this potentially lethal disease is being cascaded to paediatricians and hospitals around the region. Active surveillance of new cases is being developed to monitor the trend over the remaining winter months and assess if further actions are required.

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