Is chest X-ray useful in bronchiolitis?

Chest radiography is strongly recommended in bronchiolitis, even if the usual radiographic abnormalities, including airway disease and atelectasis, are rare. Radiography is associated with numerous disadvantages and may also be linked to an increased use of antibiotics. This study investigated the rate of radiographs inconsistent with bronchiolitis in children with typical presentation of this disease and compared the impact of radiography on therapy.

**Methods**
Between November and April 2001 and 2005, 265 children with typical bronchiolitis were enrolled in a prospective cohort study. All patients were classified by Respiratory Disease Assessment Instrument (RDAI) clinical score, were treated with 2-3 consecutive nebulisations of 2.5 mg albuterol, and underwent chest radiography. Radiographs were interpreted by a radiologist as simple, complex or inconsistent.

**Result**
Out of 265 bronchiolitis patients, two radiographs (0.75%) were inconsistent with bronchiolitis (one lobar consolidation, one cardiomegaly); 246 (92.8%) were classified as simple airway disease only and 17 (6.9%) as airway and airspace disease. Children with simple bronchiolitis were significantly less hypoxic and had a lower bronchiolitis RDAI score than children with complex or inconsistent radiographs. Infants with both a baseline oxygen saturation >92% and RDAI score <10 were 3.9 times more likely to have a simple radiograph than those with more hypoxia or more distress. Antibiotics were prescribed at diagnosis for 39 study infants (14.7%), and 31 children (11.7%) were hospitalised. Intended management (discharge versus admission) was the same pre- and postradiography in 258 out of 265 cases (97.4%). Children were five times as likely to be given antibiotics postradiography than they were to be identified to be given antibiotics pre-radiography.

**Conclusion**
Radiographs in children with typical bronchiolitis have limited value, particularly in infants without severe distress and without significant hypoxia.

**Editorial comment**
Bronchiolitis is a distressing, potentially life-threatening respiratory condition that affects infants. Surveys of clinical practice in acute management from many centres across the world have shown wide variations, even within countries [1]. There is much controversy, confusion, and lack of evidence over the best treatments of this common condition [2]. The decision to admit a baby to hospital is usually made in the emergency department. A routine part of this assessment is measurement of saturation via pulse oximetry, which strongly influences clinicians’ decision to admit when the oxygen saturation is <92% [3]. The routine use of chest radiography in infants with bronchiolitis increases health costs and can often expose the patient to radiation unnecessarily. Most infants presenting with bronchiolitis had a normal chest radiograph. Temperature ≥38°C and O₂ saturation <94% were significantly associated with infiltrate/atelectasis. The absence of fever and hypoxia are good predictors of normal chest radiographs [4]. The radiological findings of bronchiolitis are nonspecific, and the presence of atelectasis, which may not be distinguishable from consolidation, may lead clinicians to treat presumptively even if unnecessarily. Reducing the use of radiographs in children with bronchiolitis does seem warranted and has been shown by others to be associated with decreased probability of antibiotic use [5]. Risk of airspace disease appears particularly in children with saturation higher than 92% and mild or moderate distress. The request for a chest X-ray in acute bronchiolitis should be made only when the need for intensive care is being considered, when there has been an unexpected deterioration in the child’s condition or the child has an underlying cardiac or pulmonary disorder [6].

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**References**