

## Penilaian prosedur dan keberhasilan induksi sputum dari saluran respiratori bawah pada anak = Evaluation of procedure and efficacy of sputum induction from lower respiratory tract in children

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### Abstrak

[<b>ABSTRAK</b><br>

Latar Belakang: Induksi sputum merupakan metode alternatif untuk mendapatkan spesimen dari saluran respiratori bawah yang bersifat semi-invasif. Induksi sputum belum menjadi pemeriksaan standar pada anak, padahal sputum merupakan spesimen yang baik untuk berbagai pemeriksaan penunjang, misalnya pulasan sitologi dan biakan bakteri. Keberhasilan induksi sputum dalam mendapatkan spesimen dari saluran respiratori bawah pada anak masih diragukan.

Tujuan: Mengetahui keberhasilan induksi sputum dalam mendapatkan spesimen dari saluran respiratori bawah pada anak dengan infeksi saluran respiratori bawah, toleransi induksi sputum, dan pola biakan dari spesimen sputum yang didapatkan.

Metode: Penelitian potong lintang deskriptif pada subjek anak berusia 1 bulan hingga 18 tahun dengan infeksi respiratori bawah yang dipilih secara konsekutif. Subjek menjalani induksi sputum. Sputum diperiksa jumlah sel makrofag alveolar, kadar protein surfaktan A (SP-A), serta biakan bakteri aerob, atau pulasan bakteri tahan asam dan biakan *M. tuberculosis*.

Hasil: Empat puluh orang subjek berpartisipasi dalam penelitian ini, induksi sputum berhasil dilakukan pada seluruh subjek. Usia termuda 2 bulan dan tertua 16 tahun 7 bulan. Sebagian besar subjek (27 dari 40 orang) didiagnosis dengan tuberkulosis, diikuti pneumonia dan bronkiolitis. Median durasi induksi sputum 45 menit, dan sebagian besar volume 3 atau 4 mL. Efek samping berupa perdarahan hidung (40%) dan muntah (2,5%). Jumlah sel makrofag alveolar lebih dari 5 buah ditemukan pada 97,5% subjek. Sementara, SP-A diperiksa pada 30 spesimen dan SP-A dideteksi pada seluruh spesimen dengan median 264,528 pg/mL.

Pulasan bakteri tahan asam negatif pada seluruh subjek yang diperiksa, sementara biakan *M. tuberculosis* positif pada 1 dari 27 (3%) subjek. Biakan bakteri aerob positif pada 5 dari 13 (38,5%) orang subjek.

Simpulan: Induksi sputum memiliki keberhasilan yang baik untuk mendapatkan spesimen dari saluran respiratori bawah pada anak dan aman dilakukan. Spesimen sputum yang diperoleh secara induksi memiliki hasil positif biakan bakteri aerob yang cukup baik.

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<b>ABSTRACT</b><br>

Background: Sputum induction is an alternative method to obtain specimen from lower respiratory tract. Although sputum is a good specimen for various examination such as cytology and microbiological culture, sputum induction is not a standard method in children. The efficacy of sputum induction to obtain specimen from lower respiratory tract in children is unclear.

Objective: To identify the efficacy of sputum induction to obtain specimen from lower respiratory tract in children with lower respiratory tract infection. Also, to identify side effects of sputum induction and the result of microbiological culture.

Design: A cross sectional study was performed in children from age 1 month old to 18 years old with lower

respiratory tract infection, consecutively. Subject underwent sputum induction, and specimens were examined for number of alveolar macrophage cell, surfactant protein A (SP-A) concentration, also aerobic microbial culture, or acid-fast bacilli smear and *M. tuberculosis* culture.

**Result:** Forty subjects participated in this study, and sputum induction was successfully performed in all subjects. Youngest subject was 2 months old, while the eldest was 16 years 7 months old. Most subjects (27 of 40) were diagnosed with tuberculosis, followed by pneumonia and bronchiolitis. Median duration of sputum induction was 45 minutes, and majority of volume was 3 or 4 mL. Side effects were nose bleeds (40%) and vomiting (3%). Macrophage alveolar more than 5 cells in one specimen was found in 97.5% subjects. Laboratory examination for SP-A was performed in 30 subjects' specimens, and SP-A was detected in all examined specimens with median concentration 264.528 pg/mL. Culture for *M. tuberculosis* was positive in 1 of 27 subjects (3%), while acid fast bacilli smear was negative in all examined subjects. Aerobic microbial culture was positive in 5 of 13 subjects (38.5%),

**Conclusions:** Sputum induction has good efficacy in obtaining lower respiratory tract specimen and it is safe to perform in children. Specimen from sputum induction yields good positive result for aerobic microbial cultures.;**Background:** Sputum induction is an alternative method to obtain specimen from lower respiratory tract. Although sputum is a good specimen for various examination such as cytology and microbiological culture, sputum induction is not a standard method in children. The efficacy of sputum induction to obtain specimen from lower respiratory tract in children is unclear.

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