

HUBUNGAN GAMBARAN RADIOLOGI TUBERKULOSIS DENGAN DERAJAT MALNUTRISI AKUT PADA ANAK USIA BALITA: STUDI MENGGUNAKAN FOTO THORAKS

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ABSTRAK

Latar belakang: Tuberkulosis (TB) anak merupakan masalah kesehatan utama di berbagai negara, termasuk Indonesia. Usia balita berisiko lebih tinggi terinfeksi TB dan dipengaruhi oleh status gizi anak. Foto thoraks berperan penting dalam pendekatan diagnosis TB anak, khususnya pada wilayah dengan fasilitas terbatas, di mana *mobile X-ray* dapat dimanfaatkan.

Tujuan: Menganalisis hubungan gambaran radiologi TB pada foto thoraks layak baca dengan derajat malnutrisi akut pada anak usia balita.

Metode: Penelitian ini menggunakan *desain cross-sectional*. Subjek penelitian merupakan anak usia 1 bulan - 5 tahun yang dilakukan pemeriksaan foto thoraks dan pengukuran antropometri. Foto thoraks layak baca diklasifikasikan menjadi normal, non-spesifik TB, dan spesifik TB. Derajat malnutrisi akut dinilai menggunakan *Weight-for-Height Z-score* berdasarkan standar WHO dan diklasifikasikan sebagai adekuat, malnutrisi akut sedang (MAM), dan malnutrisi akut berat (SAM). Analisis hubungan dinilai dengan uji korelasi Spearman.

Hasil: Dari 289 foto thoraks, sebanyak 241 foto (83,39%) dinilai layak baca dengan *rejected images* sebanyak 48 (16,61%). Gambaran radiologi normal ditemukan pada 100 anak (41,49%), non-spesifik TB pada 40 anak (16,59%), dan spesifik TB pada 101 anak (41,90%). Status gizi adekuat ditemukan pada 118 anak (48,96%), MAM pada 100 anak (41,49%), dan SAM pada 23 anak (9,54%). Terdapat hubungan bermakna antara gambaran radiologi TB pada foto thoraks dengan derajat malnutrisi akut ($p < 0,001$) dengan korelasi sedang ($\rho = -0,471$).

Simpulan: Dari 289 foto thoraks yang dikerjakan dengan *mobile X-ray*, didapatkan *reject rate* sebesar 16,61%. Terdapat hubungan signifikan antara gambaran radiologi TB pada foto thoraks dengan derajat malnutrisi akut pada anak usia balita.

Kata kunci: tuberkulosis anak, foto thoraks, *mobile x-ray*, malnutrisi akut

THE RELATIONSHIP BETWEEN RADIOLOGICAL FINDINGS OF TUBERCULOSIS AND THE DEGREE OF ACUTE MALNUTRITION IN CHILDREN UNDER FIVE: A STUDY USING CHEST X-RAYS

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ABSTRACT

Background: Pediatric tuberculosis (TB) remains a major public health issue in high-burden countries, including Indonesia. Children under five years old are at higher risk of TB, especially when accompanied by malnutrition. Chest radiography plays an essential role in diagnosing TB, particularly in areas with limited facilities, where mobile X-ray is increasingly utilized.

Objective. To analyze the relationship between radiological findings of TB on interpretable chest X-rays and the degree of acute malnutrition in children under five, and to evaluate the technical adequacy of chest X-rays performed using mobile X-ray.

Methods: This cross-sectional observational study included children aged 1 month to 5 years who underwent chest X-ray examinations and anthropometric measurements. Interpretable chest X-rays were classified as normal, non-specific TB, or TB-specific. Acute malnutrition was assessed using Weight-for-Height Z-score (WHZ) according to WHO standards and categorized as adequate, moderate acute malnutrition (MAM), or severe acute malnutrition (SAM). The relationship between radiological findings and nutritional status was analyzed using Spearman correlation.

Results: From total 289 images, 241 images (83.39%) were interpretable, while 48 images (16.61%) were rejected. Normal radiological findings were observed in 100 children (41.49%), non-specific TB in 40 children (16.59%), and TB-specific in 101 children (41.90%). Nutritional status was adequate in 118 children (48.96%), MAM in 100 children (41.49%), and SAM in 23 children (9.54%). A significant correlation was found between chest X-ray TB findings and the degree of acute malnutrition ($p < 0.001$; $\rho = -0.471$).

Conclusion: In this study using a mobile X-ray, the rejection rate was 16.61%. There is a significant relationship between radiological TB findings and acute malnutrition severity in children under five.

Keywords: pediatric tuberculosis, chest X-ray, mobile X-ray, acute malnutrition