ABSTRACT

Background: Medical Laboratory Technologists (MLTs) play a vital role in healthcare services, particularly in laboratory examinations that support disease diagnosis. In the context of infectious diseases such as Tuberculosis (TB), MLTs have a strategic role in detecting and confirming diagnoses through various testing methods. The two main diagnostic methods for TB are the Molecular Rapid Test (MRT) and microscopic Acid-Fast Bacilli (AFB) examination. While MRT is superior in terms of speed and sensitivity, AFB remains widely used due to its simplicity and low cost. This study aimed to compare the two methods to support more accurate pulmonary TB diagnosis in primary healthcare settings.

Objective: This study aims to determine the suitability of the Molecular Rapid Test (TCM) and microscopy methods in diagnosing and managing pulmonary TB by evaluating their sensitivity, specificity, accuracy, the prevalence of positive cases, and the role of TCM in early detection and resistance to rifampicin.

Methods: This study employed an observational analytic design with a cross-sectional approach, involving 90 suspected pulmonary TB patients at the Banjarharjo Health Center. Examinations were conducted using both the Molecular Rapid Test (MRT) and microscopy methods. Data were analyzed to determine the sensitivity, specificity, and accuracy of each method. The Kappa test was used to assess the level of agreement between the two methods, while the McNemar test was applied to evaluate differences in the proportion of positive results.

Results: This study showed excellent agreement between MRT and microscopy methods with a Kappa coefficient of 0.943. The MRT method showed a sensitivity of 100%, specificity of 97%, and accuracy of 97%. The prevalence of positive TB cases detected by MRT was 27%, slightly higher than microscopy at 25%. These results indicate that MRT is more sensitive and effective for early detection of pulmonary TB, including identification of rifampicin resistance.

Conclusion: The TCM method is superior to the AFB microscopy method in detecting pulmonary TB quickly, accurately, and with high sensitivity. These results support the use of TCM as an initial screening method in primary healthcare settings.

Keywords: Molecular Rapid Test, AFB Microscopy, Pulmonary Tuberculosis, Kappa Test, TB Diagnosis.

ABSTRAK

Latar Belakang: Ahli Teknologi Laboratorium Medis (ATLM) memiliki peran penting dalam pelayanan kesehatan, khususnya dalam pemeriksaan laboratorium yang mendukung diagnosis penyakit. Dalam konteks penyakit menular seperti Tuberkulosis (TB), ATLM berperan strategis dalam mendeteksi dan mengonfirmasi diagnosis melalui berbagai metode pemeriksaan. Dua metode utama diagnosis TB adalah Tes Cepat Molekuler (TCM) dan mikroskopis BTA. TCM unggul dalam kecepatan dan sensitivitas, namun BTA tetap digunakan karena sederhana dan murah. Penelitian ini bertujuan membandingkan kedua metode untuk mendukung diagnosis TB paru lebih akurat dalam pelayanan kesehatan primer.

Tujuan: Mengetahui kesesuaian metode Tes Cepat Molekuler (TCM) dan mikroskopis dalam diagnosis dan penanganan TB Paru dengan menilai sensitivitas, spesifisitas, akurasi, serta pravelensi kasus positif dan peran TCM dalam deteksi dini dan resistensi terhadap rifampisin.

Metode: Penelitian ini menggunakan studi analitik observasional dengan pendekatan *cross-sectional* yang melibatkan 90 sampel pasien terduga TB Paru di Puskesmas Banjarharjo. Pemeriksaan menggunakan metode Tes Cepat Molekuler (TCM) dan mikroskopis. Data dianalisis untuk mengetahui sensitivitas, spesifisitas, dan akurasi. Uji Kappa untuk menilai tingkat kesesuaian hasil kedua metode dan uji McNemar untuk menguji perbedaan proporsi hasil positif antara kedua metode.

Hasil: Penelitian ini menunjukkan tingkat kesesuaian yang sangat baik antara metode TCM dan mikroskopis dengan nilai koefisien Kappa sebesar 0,943. TCM memiliki sensitivitas 100%, spesifisitas 97%, dan akurasi 97%, sedangkan pravelensi kasus positif TB yang terdeteksi dengan TCM sebesar 27%, sedikit lebih tinggi dibandingkan dengan mikroskopis yaitu 25%. Menunjukkan bahwa TCM lebih sensitif dan efektif dalam deteksi TB dini termasuk dalam mendeteksi resistensi terhadap rifampisin.

Kesimpulan: Metode TCM lebih unggul dibandingkan metode mikroskopis BTA dalam mendeteksi paru secara cepat, akurat dan sensitif. Hasil ini mendukung TCM sebagai metode skrining awal di fasilitas Kesehatan dasar.

Kata Kunci: Tes Cepat Molekuler (TCM), Mikroskopis BTA, Tuberkulosis Paru, Uji Kappa, Diagnosis TB.