

AKURASI DIAGNOSTIK DENGAN MENGGUNAKAN BIOMARKER METILASI DNA DALAM DETEKSI DINI KANKER PARU: TINJAUAN SISTEMATIS

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Abstrak

Kanker paru adalah penyakit keganasan di paru, mencakup keganasan primer maupun keganasan dari luar paru yang berupa metastasis. Metode skrining dini kanker paru masih memiliki banyak kelemahan yang dapat menyebabkan tingginya insiden dan kematian pada kanker paru saat ini, sehingga diperlukan metode deteksi dini yang efektif. Pemeriksaan metilasi DNA menggunakan biomarker SHOX2 dinilai memiliki kelebihan dibandingkan biomarker lainnya. Penelitian bertujuan untuk mengetahui akurasi diagnostik biomarker SHOX2 dalam mendeteksi dini kanker paru, meliputi sensitivitas, spesifisitas, Positive Predictive Value (PPV) dan Negative Predictive Value (NPV). Desain penelitian berupa systematic review dengan data gabungan (pooled data). Pencarian literatur dilakukan pada lima database jurnal berbeda menggunakan metode Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) 2020 yang mencakup artikel tahun 2012-2022. Delapan belas studi memenuhi kriteria inklusi. Hasil penelitian menunjukkan bahwa biomarker SHOX2 memiliki nilai sensitivitas yaitu 81.84% (95% CI, 78.91-84.52%), nilai spesifisitas yaitu 82.38% (95% CI, 79.72-84.83%), nilai PPV yaitu 79.85% (95% CI, 77.40-82.09%) dan nilai NPV yaitu 84.17% (95% CI, 82.01-86.12%). Berdasarkan akurasi diagnostiknya, biomarker SHOX2 tidak disarankan sebagai alat diagnostik utama, namun dapat mendukung penegakan diagnosis setelah pemeriksaan menggunakan Low Dose CT Scan (LDCT) untuk mengurangi tingkat false positive.

Kata kunci: deteksi dini, kanker paru, SHOX2, akurasi diagnostik

DIAGNOSTIC ACCURACY USING DNA METHYLATION BIOMARKERS IN EARLY DETECTION OF LUNG CANCER: A SYSTEMATIC REVIEW

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Abstract

Lung cancer is a malignant disease in the lung, including primary malignancy and malignancy from outside the lung in the form of metastasis. Early lung cancer screening methods still have many weaknesses that can cause high incidence and mortality in lung cancer today, so an effective early detection method is needed. DNA methylation examination using the SHOX2 biomarker is considered to have advantages over other biomarkers. The study aims to determine the diagnostic accuracy of SHOX2 biomarkers in detecting early lung cancer, including sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV). The research design was a systematic review with pooled data. The literature search was conducted on five different journal databases using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) 2020 method covering articles from 2012-2022. Eighteen studies met the inclusion criteria. The results showed that the SHOX2 biomarker had a sensitivity value of 81.84% (95% CI, 78.91-84.52%), a specificity value of 82.38% (95% CI, 79.72-84.83%), a PPV value of 79.85% (95% CI, 77.40-82.09%) and an NPV value of 84.17% (95% CI, 82.01-86.12%). Based on its diagnostic accuracy, SHOX2 biomarker is not recommended as a primary diagnostic tool, but it can support the diagnosis after examination using Low Dose CT Scan (LDCT) to reduce the false positive rate.

Keywords: *early detection, lung cancer, SHOX2, diagnostic accuracy*