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Uji Diagnostik Berbagai Konsentrasi Para-phenylenediamine (PPD) sebagai Alergen Uji Tempel pada Pasien Dermatitis Kontak Alergi
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INTISARI

Latar Belakang: Dermatitis kontak alergi (DKA) dimediasi oleh reaksi hipersensitivitas tipe IV akibat pajanan alergen eksogen. Uji tempel merupakan pemeriksaan penunjang untuk menentukan alergen penyebab DKA. *Para-phenylenediamine* (PPD) adalah alergen kontak yang poten dan digunakan dalam alergen standar dengan konsentrasi standar 1%. Kekhawatiran terhadap keamanan konsentrasi tersebut mendorong penelitian mengenai penggunaan konsentrasi PPD yang lebih rendah.

Tujuan: Mengetahui perbedaan hasil uji tempel, performa diagnostik, dan kejadian reaksi lambat berbagai konsentrasi PPD <1% dibandingkan dengan konsentrasi standar PPD 1% pada pasien DKA.

Metode: Penelitian uji diagnostik pada subjek dengan DKA. Seluruh subjek menjalani uji tempel menggunakan PPD 0,1%; 0,25%; 0,3%; 0,5%; 0,75%; dan 1%. Pembacaan dilakukan pada 48, 72, 96 jam, hari ke-7, dan hari ke-14 sesuai metode ICDRG. Analisis meliputi uji *McNemar,* sensitivitas, spesifisitas, nilai prediksi, rasio *likelihood*, akurasi, dan kejadian reaksi lambat.

Hasil: Sebanyak 43 subjek diikutsertakan dalam penelitian. Konsentrasi PPD 0,75% dan 0,5% tidak berbeda bermakna dibandingkan PPD 1%, sedangkan PPD 0,3%; 0,25%; dan 0,1% menunjukkan perbedaan bermakna. Sensitivitas menurun seiring penurunan konsentrasi PPD, sedangkan spesifisitas tetap tinggi pada seluruh konsentrasi (92,59–100%). PPD 0,75% memiliki sensitivitas 68,75%, spesifisitas 100%, nilai prediksi positif 100%, dan akurasi tertinggi (0,884). Kejadian reaksi lambat tidak berbeda pada PPD 0,75%; 0,5%; 0,3%; dan 0,25%, namun lebih rendah secara bermakna pada PPD 0,1%.

Kesimpulan: PPD 0,75% memiliki performa diagnostik relatif yang paling mendekati PPD 1%. Penurunan konsentrasi di bawah 0,75% menurunkan kemampuan diagnostik PPD.

Kata kunci: *dermatitis kontak alergi, para-phenylenediamine, uji tempel, performa diagnostik, reaksi lambat*

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ABSTRACT

Background: *Allergic contact dermatitis (ACD) is a type IV hypersensitivity reaction to exogenous allergens. Patch test is the gold standard for determining the cause of ACD. Para-phenylenediamine (PPD), a potent contact allergen, is included in the baseline patch test series at a standard concentration of 1%. Concerns regarding its safety have prompted evaluation of lower PPD concentrations.*

Objective: *To compare patch test results, diagnostic performance, and late reactions of PPD concentrations <1% with the standard 1% PPD concentration in patients with ACD.*

Methods: *A diagnostic-study was conducted in patients with ACD. Participants underwent patch testing with PPD concentrations of 0.1%, 0.25%, 0.3%, 0.5%, 0.75%, and 1%. Readings were performed at 48, 72, and 96 hours, and on days 7 and 14 according to ICDRG criteria. Paired patch test results were compared using McNemar's test, and relative diagnostic performance parameters and late reactions were evaluated.*

Results: *Forty-three participants were included. Patch test results with PPD 0.75% and 0.5% did not differ significantly from those with PPD 1%, whereas PPD 0.3%, 0.25%, and 0.1% showed significant differences. Sensitivity decreased with declining PPD concentrations, while specificity remained high (92.59–100%). Para-phenylenediamine 0.75% showed the highest sensitivity (68.75%), 100% specificity, 100% positive predictive value, and the highest accuracy (0.884). The frequencies of late reactions did not differ significantly from those of PPD 1%, except at PPD 0.1%, which showed significantly fewer reactions.*

Conclusion: *Para-phenylenediamine 0.75% demonstrated the closest relative diagnostic performance to PPD 1% as the reference standard. Reducing the PPD concentration below 0.75% was generally associated with lower relative sensitivity, negative predictive value, and relative accuracy.*

Keywords: *allergic contact dermatitis, para-phenylenediamine, patch test, diagnostic performance, late reaction*