

Profil pemeriksaan P300 Auditorik pada penilaian fungsi kognitif anak dengan gangguan pemusatan perhatian/hiperaktivitas

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Abstrak

Latar belakang: Penegakkan diagnosis gangguan pemusatan perhatian/hiperaktivitas (GPPH), suatu gangguan perilaku terbanyak pada anak usia SD, dilakukan secara subjektif. Anak GPPH menunjukkan berbagai spektrum gangguan kognitif yang sering menyebabkan kegagalan fungsi kehidupan sosial dan akademik. Pemeriksaan P300 event-related potential (ERP) merupakan teknik pemeriksaan neurofisiologis yang sering digunakan untuk menilai fungsi kognitif secara objektif.

Tujuan: Untuk mengetahui profil pemeriksaan P300 pada anak GPPH.

Metoda: studi potong lintang pemeriksaan ERP auditorik diskriminasi 2 nada pada 75 anak GPPH yang memenuhi kriteria inklusi. Performa motorik dan gelombang ERP yang timbul terhadap nada target direkam dan dianalisis.

Hasil: Rerata kecepatan reaksi, hits, dan latensi gelombang P300 didapatkan berbeda bermakna antara tipe-tipe GPPH (inatentif, hiperaktif, dan kombinasi). Anak GPPH dengan komponen inatentif menunjukkan kecepatan reaksi dan latensi gelombang P300 yang memanjang ($p < 0.001$), serta hits yang lebih rendah ($p < 0.01$). Commission error cenderung lebih tinggi pada anak GPPH dengan komponen hiperaktif. Pada anak GPPH tipe hiperaktif juga tampak kecenderungan respon motorik yang mendahului terbentuknya gelombang P300. Amplitudo gelombang P300 pada sadapan frontal ditemukan lebih tinggi pada anak GPPH tipe inatentif.

Kesimpulan: Pemeriksaan P300 auditorik diskriminasi 2 nada dapat digunakan untuk menilai fungsi kognitif anak GPPH. Inatentivitas dan hiperaktivitas mempengaruhi performa motorik dan latensi gelombang P300. Amplitudo yang tinggi di area frontal mungkin merupakan mekanisme kompensasi anak GPPH dalam upaya mengatasi gangguan atensi yang terjadi.

.....Background: Subjective behavioral assessment of attention deficit/hyperactivity disorder (ADHD), the most common pediatric behavioral disorder in school-aged children, has norm to date. Children with ADHD commonly show some spectrums of cognitive dysfunction; accounting for many social and learning problems. P300 event-related potential (ERP), as a neurophysiological technique, provides measurements of specific cognitive domains objectively.

Objective: To investigate profiles of P300 ERP in school-aged children with ADHD.

Method: Auditory ERP two-tone discrimination ('oddball') paradigms were recorded from 75 children diagnosed with ADHD (inattentive, hyperactive, and combined type). Motor performances and ERPs elicited to target stimuli were analyzed for between-group differences. Results: Reaction times (RTs), hits, and P300 latency were significantly different between groups. Slower RTs, poorer hits, and longer P300 latency were significantly recorded in groups with inattentive component ($p < 0.01$). Commission errors were found to be higher in groups with hyperactive component. Shorter RTs were also observed earlier than P300 waves in hyperactive-impulsive group. P300 amplitudes were found significantly higher in inattentive group. Conclusions: Auditory P300 ERP two-tone discrimination paradigm in ADHD children are capable to

reveal disturbances in some aspects of cognitive domains. Inattention and hyperactivity-impulsivity impact the motoric performance and the P300 latency. Attenuated P300 amplitude in frontal region may reflect an attentional compensation mechanism in ADHD children.