

Evaluating the Validity of the Combined Bedside Test in Diagnosing Juvenile Myasthenia Gravis (2012-2024)

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Abstract : Background: Myasthenia gravis (MG) is an autoimmune disorder characterized by impaired neuromuscular transmission due to antibodies against nicotinic receptors, leading to muscle weakness, ptosis, and respiratory issues. The incidence of MG has risen globally, emphasizing the need for effective diagnostics. Objective: This study evaluates the validity of a combined bedside test (the ice pack test and fatigability test) for diagnosing juvenile myasthenia gravis (JMG) in pediatric patients with ptosis. Methods: This cross-sectional study, conducted from January 2012 to May 2024 at King Chulalongkorn Memorial Hospital, Thailand, included pediatric patients (1 month to 18 years) with ptosis undergoing ice pack and fatigability tests. Data included demographics, clinical findings, and test results. Diagnostic efficacy was assessed using sensitivity, specificity, accuracy, PPV, NPV, Fagan Nomogram, Kappa Statistics, and McNemar's Chi-Square. Results: Of 43 identified patients, 32 were included, with 47% male and a mean age of 7 years. The combined bedside test had high sensitivity (92.8%) and accuracy (87.5%) but moderate specificity (50%). It significantly outperformed the ice pack test ($P = 0.0005$), which showed low sensitivity (42.8%) and accuracy (43.8%). The fatigability test had 82% sensitivity and 92% PPV. Confirmatory tests (AChR-Ab, MuSK-Ab, neostigmine, repetitive nerve stimulation) supported most diagnoses. Conclusions: The combined bedside test, with high sensitivity (92.8%) and accuracy (87.5%), is an effective screening tool for juvenile myasthenia gravis, outperforming the ice pack test. Integrating it into clinical practice may improve diagnosis and enable timely treatment. The fatigability test (82% sensitivity) is also useful as an adjunct screening tool.

Keywords : myasthenia gravis (MG), the ice pack test, the fatigability test, the combined bedside test

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