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Ocular neostigmine drops for diagnosing myasthenia gravis

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Abstract

A variety of tests have been devised for the diagnosis of myasthenia gravis (MG). The best known of these is the Tensilon Test, using intravenous edrophonium chloride. However, potential serious complications (bradycardia and syncope) dictate cardiac monitoring during the procedure. Ocular neostigmine drops, a simple procedure, may significantly reduce the risk of diagnostic testing for possible MG. To investigate its safety and efficacy, the miotic effect of neostigmine was explored using 30 rabbits. One drop of sterile neostigmine solution (2.5mg/ml) was instilled into the right eye (RE) of each rabbit using the left eye (LE), which received sterile normal saline, as control. Serial assessments of pupillary size were done. At baseline there was no significant difference in the mean [SD] papillary size between the RE (7 mm [1.07]) and LE (7 mm [1.07], p =0.63). Significant miotic effect was observed in the RE compared to the LE at 30 and 60 minutes (respectively, 4.8 mm [1.86] vs 7.0 mm [1.09], p = 0.0001; and 4.8 mm [1.86] vs 7.0 mm [1.09] p = 0.0001). Administration of one drop of neostimine daily for 7 days caused no ocular inflammation. Six patients (aged 4.5 – 55y, median = 42y, mean = 36.4y) with MG had the same test. An observable increase of the palpebral fissure height (documented by photography) of at least 2 mm was observed 30 minutes after neostigmine instillation, being dramatic in the three patients with no prior treatment for MG. Ocular neostigmine drops is a safe diagnostic test for MG.

Biography

Mustafa A. M. Salih earned an MBBS, an MPCH degree, a Doctor of Medicine with Distinction, all from the University of Khartoum, Sudan; and a Doctor of Medical Sciences in 1990 from Uppsala University in Sweden. In 2005, he was elected Fellow to The Royal College of Paediatrics and Child Health (FRCPCH, UK). Currently, Prof. Salih serves as Consultant Pediatric Neurologist at the College of Medicine, King Saud University, Riyadh, Saudi Arabia. He has published 153 scientific articles in peer-reviewed medical journals, two supplements in the *Scandinavian Journal of Infectious Diseases* and the *Saudi Medical Journal*, and 10 book chapters.