Biomechanics responsible for effect of elbow position on biceps tendon reflex: Authors’ reply

Sir,

We thank the author(s) of the letter for taking interest in our article “The effect of elbow position on biceps tendon reflex” and appreciate the detailed comments concerning the biomechanical aspects of the subject. However, some minor points in this letter need clarifications.

Firstly, we think that the author(s) may inadvertently be mistaken in the comments by saying that the mean amplitude increased progressively from 90° to 150°, since the mean amplitude of the biceps tendon reflex was found to be decreased (not increased) progressively from 90° to 150° of elbow position in our study.

Secondly, the position of the forearm was not vertical at 90° or other elbow positions in our study, since we tested the biceps tendon reflex of the subjects on the examination table in a relaxed supine position with the elbow held at 90° and the hand on the abdomen. After the procedure was completed for 90° of elbow position, the angle of elbow was first extended to 120° and then to 150° for the same procedures. Thus, in addition to the other possible factors, the biomechanical aspects of this procedure may also account for the decrease in the amplitude of the tendon reflex by increasing the angle of the elbow; however, the changes in the biceps muscle size may be the most probable determinant of the variations in amplitude of biceps reflex.

Concerning the third point, as we mentioned in the article, maximum biceps tendon reflex amplitude was obtained at 90° elbow position, however, the mean amplitude of biceps tendon reflex obtained at 120° of elbow position was extremely close to that obtained at 90° of elbow position, and the difference between 90° and 120° of elbow position was not significant statistically in contrast to the difference 90° and 150° or to the difference 120° and 150° of elbow position. Thus, it is evident that the amplitude of the reflex decreases with the increase of elbow angle, however, this result does not let to propose tapping the biceps tendon with the elbow placed at only an angle of 90° to get the maximum amplitude.

In clinical examinations, it is important to compare tendon reflexes in terms of magnitude and symmetry. However, in neurophysiological examinations, it is also important to determine the latency as well as the amplitude of a reflex. It is obvious that the magnitude of the reflex response alters depending on the several factors including particularly the rate of the stretch, angle of the joints, the intensity of the tapping and also the biomechanical factors.

As a conclusion, in clinical and electrophysiological practice, while testing the tendon reflexes, it may be better to keep in mind that the magnitude (electrophysiologic equivalent of amplitude) of a reflex may change due to various factors including the position of the extremity.

I. Keles*, N. Balci**, M. Beyazova***
Departments of Physical Medicine and Rehabilitation, *Kirikkale University, Faculty of Medicine, Kirikkale; **Akdeniz University, Faculty of Medicine, Antalya; and ***Gazi University, Faculty of Medicine, Ankara, Turkey. E-mail: ikeles@ttnet.net.tr

Reference


Concurrent intramedullary and intracerebral tuberculomas

Sir,

Eventhough central nervous system tuberculosis is an uncommon entity affecting 0.5% to 2% of patients with systemic tuberculosis, intracranial tuberculomas account for significant number of intracranial mass lesions in developing countries. However, intramedullary tuberculomas are very rare, seen at a rate of 2/1000 cases of central nervous system tuberculosis. The incidence of concurrent spinal and cerebral tuberculomas is still very rare with less than ten cases reported in the literature. An interesting case of concurrent spinal and cerebral tuberculoma who manifested simultaneously as acute quadriplegia and seizures reported here.

A 38 years old gentleman presented with sudden onset of weakness of all the four limbs of two weeks duration associated with retention of urine. Neurologically, his motor system examination revealed flaccid quadriplegia with grade 3/5 power proximally in both upper limbs and grade 0/5 power in both lower limbs with brisk deep tendon reflexes and extensor
plantar response. Sensory examination revealed graded sensory loss below C5 dermatome. His hematological examination revealed Hb= 12 gms/dl, WBC count = 6700/cu.mm and ESR= 40 mm/hour. Montoux and HIV tests were negative. His chest x-ray revealed no abnormality. Magnetic resonance imaging (MRI) scan of the cervical spine revealed an iso to hypointense, ring enhancing intramedullary lesion involving the whole circumference of the lower cervical spinal cord (Figure 1). During the hospital stay, he developed an attack of primary generalized tonic clonic seizures. His cranial MRI scan revealed multiple isodense, ring enhancing lesions involving both cerebral hemisphere suggestive of tuberculoma (Figure 2). He underwent C4 to T1 laminectomy. The lesion was causing the segmental enlargement of the cord and replacing the cord circumferentially. It was firm in consistency peripherally and avascular, yellowish and cheesy in the center. The lesion was excised subtotally as it was totally replacing the whole cord tissue. Postoperatively, he was continued on steroid and antituberculous therapy continued. Histopathological examination of the lesion confirmed typical tubercular granuloma. At 18 months follow-up, patient did not showed any neurological improvement and having spastic quadriplegia despite the disappearance of spinal lesion radiologically (Figure 3).

Tuberculomas develop following haematogenous dissemination of bacilli from an infection elsewhere in the body, usually lung. Intracranial tuberculomas continue to be a serious complication of central nervous system tuberculosis affecting.1 The spinal cord is much less commonly involved than the brain at a ratio of approximately 1:42.2 However, concurrent spinal and cerebral tuberculoma is extremely rare and only few case reports were found in the literature.2,3,5 Multiple central nervous system tuberculoma is commonly associated with human immunodeficiency virus (HIV) infection.1 However the case reported here neither had HIV infection nor evidence of systemic tuberculosis. Intracranial tuberculomas can sometimes develop or increase in size despite administration of appropriate therapy.8 Similarly, cases of multiple intramedullary spinal tuberculomas developing paradoxically during effective treatment of tuberculous meningitis are also described in the literature.3,4,7 Paradoxical enlargement or development of tuberculomas usually does not represent failure of antituberculous therapy.

The diagnosis of tuberculoma is usually made based on pathology, neuroimaging or clinical response to tuberculobus chemotherapy. The intramedullary spinal tuberculoma although a rare entity, must be considered in the differential diagnosis of the spinal cord compression in patients with a history of systemic tuberculosis and/or human immunodeficiency virus infection.3,4,7 The MRI features of the tuberculomas are distinct from other intramedullary lesions and are reliable enough to start antituberculous therapy.2,3,6 Similarly MRI scan is also useful to monitor the response to treatment especially when conservative treatment is advised.6 Most of these lesions usually resolve completely with antituberculous therapy2 and surgical excision of the lesion is advised in patients with mass effect and paradoxical enlargement of the tuberculoma.7,8 However our patient did not improve despite surgical excision followed by antituberculous treatment. The failure to respond to the treatment in our case is probably multifactorial, namely, delay in instituting treatment, vascular involvement over and above an extensive intramedullary tuberculomas replacing whole circumference of the spinal cord.

S. N. Shenoy, A. Raja
Acute occlusion of internal carotid artery: Thrombolysis and stent placement

Sir,

Endovascular treatment of the carotid artery occlusion with balloon angioplasty-stenting and intra-arterial thrombolysis is being increasingly accepted as a treatment for acute stroke.

A 61-year-old right-handed man presented with history suggestive of transient ischemic attacks 10 days ago. A clinical examination revealed no neurological deficits. An MR imaging revealed a small old lacunar infarction. Carotid angiography revealed 80% left carotid artery stenosis and 20% right carotid artery stenosis with normal intracranial circulation (Figure 1a). Two days after the procedure, the patient developed an acute onset of aphasia and right hemiplegia. Neurological examination showed a NIH stroke score of 19. Emergent angiography showed occlusion at the ICA origin (Figure 1b). No external-to-internal collaterals and leptomeningeal collaterals were present and no filling of the middle cerebral artery territory and lenticulostriate artery was observed. An exchange guidewire was passed through the diagnostic catheter and introducer was changed with 9F sheath introducer system. After a bolus of 5000 IU of heparin, a continuous heparin infusion was started. A 9F guiding catheter was placed into the common carotid artery over a 0.035-in, 300-cm guidewire positioned in the ipsilateral external carotid artery. A Tracker-18 microcatheter (Target therapeutic, Los Angeles, CA, USA) was advanced over a Transend EX 0.014-in microguidewire (Boston Scientific). Microcatheter was embedded into the thrombus and a bolus of 20 mg t-PA (Alteplase) was given in 5 minutes. A partial recanalization was obtained. Before starting stenting a control angiogram showed re-occlusion. Another 20 mg t-PA was administered and recanalization was obtained (Figure 1c). The stenosis was crossed with 0.014-in exchange guidewire. Predilation of the carotid artery stenosis was not performed. Protective device was not used. A self-expandable 7 x 40 mm SMART (Cordis) stent was deployed across the carotid stenosis. Postdilation was performed with a 5-mm balloon. Final control angiogram revealed a patent ICA and good intracranial circulation (Figure 1d). Twenty-four hours later a carotid Doppler ultrasound demonstrated patent left carotid artery with normal spectral flow. Three-month follow-up showed that the ICA remained patent.

Carotid occlusive disease is responsible for approximately

Accepted on 06.11.2004.