SIMULTANEOUS BILATERAL OCCULOMOTOR NERVE PARALYSIS: AN UNUSUAL MANIFESTATION OF DIABETES MELLITUS

Dear Sir,

Ocular cranial nerves can be involved in diabetes mellitus. They occur either in isolation or sequentially. Simultaneous bilateral third cranial nerve involvement in patients with diabetes mellitus is exceedingly rare. We report a 40-year-old man who complained of sudden-onset diplopia on looking towards either side for 15 days. There was no history of fever, headache, eye pain, seizure, loss of consciousness or any other focal neurological deficit. He was diagnosed to have type 2 diabetes mellitus for ten years and was treated with oral hypoglycaemic agents with poor glycaemic control. Neurological examination revealed bilateral III cranial nerve palsy (ptosis, incomitant exo-deviation and restriction of adduction in both eyes) with normal pupillary reflexes. In addition, the patient also had involvement of posterior columns in the lower limbs (absent ankle jerks along with impaired joint position and vibration sense). The rest of the neurological and systemic examination was unremarkable. Non-proliferative diabetic retinopathy (micro-aneurysms, dot and blot haemorrhages, hard exudates and a few cotton wool spots) was present on fundus examination. There was no improvement in diplopia after neostigmine administration.

Laboratory investigations showed normal haemogram, renal function and arterial blood gas analysis. Fasting blood glucose was 12 mmol/L. Urine analysis showed 1+ proteinuria (300 mg albumin on 24-hour urinary collection). Magnetic resonance imaging of the brain (T1-weighted with contrast, T2-weighted and fluid attenuated inversion recovery images) did not reveal any abnormality. Cerebrospinal fluid examination showed two cells (both lymphocytes), no malignant cells, glucose 11 mmol/L (corresponding blood glucose 14 mmol/L), proteins 40 mg/dL. On gram stain, acid-fast bacilli stain and India ink, no organism was seen. Antinuclear factor and antinuclear cytoplasmic antibodies by immunofluorescence and veneral disease research laboratory tests were non-reactive. The patient was managed with insulin, atorvastatin, ramipril and aspirin. He was discharged after normalisation of blood glucose concentrations. Over the next five months, the patient's diplopia resolved completely and there was no residual opthalmoplegia.

While ocular cranial nerves are commonly involved in diabetes mellitus, third cranial nerve involvement is not so common. Hopf and Gutmann reported only 11 patients with isolated third cranial nerve involvement in association with diabetes mellitus over a period of four years from a university hospital[1]. Simultaneous bilateral occulomotor nerve parlysis in diabetes mellitus is even more unusual and has rarely been reported in literature[2,3]. The first such case of diabetes mellitus with bilateral III cranial nerve palsy was reported in 1866[4]. Richards et al published a paper on causes of simultaneous bilateral ocular nerve paralysis and in this paper, diabetes mellitus accounted for less than 1% of cases[5]. In the 11 cases reported by Hopf and Gutmann, none of these had bilateral involvement[1]. The postulated aetiology of ocular cranial nerve paralysis in diabetes mellitus is infarction/ischaemia of vasa nervosum of these nerves. The probability of infarction/ischaemia of two vasa nervosum at the same time remains relatively low. It is even more rare for infarction/ischaemia to involve the identical vasa nervosum on the right and left side at the same time. This accounts for the rarity of the simultaneous involvement of two or more cranial nerves.

In a patient with diabetes mellitus presenting with simultaneous bilateral ocular cranial nerves involvement, mucormycosis and tubercular meningitis must be ruled out. Other causes that warrant exclusion include Graves' ophthalmopathy, myasthenia, botulism, snake envenomation, arteritis, chronic progressive external ophthalmoplegia, neurosyphilis, diphtheria, malignancy and multiple sclerosis. Rare causes like orbital myositis, metastasis, basilar artery insufficiency, and Wernicke's encephalopathy must also be considered in differential diagnosis. To conclude, as Sergott et al have aptly summarised: "Diabetics are permitted one cranial neuropathy at a time. Exception to this rule, either more than one motor cranial nerve per eye, or simultaneous bilateral cranial palsies makes investigations mandatory"[6].

Yours sincerely,

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