LETTERS

Focal hand dystonia after cervical whiplash injury

There is currently a general consensus of agreement that dystonia is a disease of the basal ganglia, although dystonic symptoms have been observed in association with lesions in various different sites of the sensory and motor pathways.1 In particular, cervical intramedullary lesions have been reported as being a rare cause of focal hand dystonia, although in these cases the pathogenesis of the movement disorder remains unclear. To help clarify this point, we report the case of a patient who developed dystonic features of the right hand after a cervical whiplash injury.

Case report

A 44 year old man developed sensory alterations and impairment of strength in the right hand immediately after a whiplash injury. Neurological examination showed proprioceptive and tactile anaesthesia of the first three fingers of the right hand, a marked hyposthesia on grasping, and adiadochokinesis of the right upper limb. Tendon reflexes, muscle tone, and plantar responses were normal, and thorough neurological examination of the upper limb and lower limbs also yielded normal findings. Cervical magnetic resonance imaging (MRI) revealed a small right posterior C5-C6 lesion of the spinal cord (see fig 1). Brain MRI, nore conduction studies, EMG, and transcranial magnetic stimulation were all normal. Two months later, the patient developed writhing movements of the first three fingers and a dystonic posture of the right hand, worsened by movement, and more evident when the eyes were closed. Ability to write, use a knife or fork, and hold a glass were moderately impaired, especially without visual guidance. Neurological examination at this time revealed slight cutaneous and proprioceptive hypesthesia and paraesthesias of the first three fingers of the right hand, while grasping strength was normal and the EMG recording showed a pattern of co-contraction of the forearm flexor and extensor muscles. Median nerve sensory volleys recorded at the elbow and at the Erb's point had no history of neuroleptic medications and the cortical waves ranged from 1.8 to 2.4.

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The most intriguing finding, however, is that the SEP cortical waves were markedly larger in response to stimulation of the median nerve on the dystonic side, and the spinal potential was slightly larger on the affected side. The asymmetry of SEP amplitudes was not attributable to different intensities of stimulation on the two sides, as the intensity of the peripheral shock was the same, as was the amplitude of the afferent volleys recorded at the elbow and at the Erb's point. A larger N30 potential has previously been described in dystonic patients, but this finding has not been replicated in other studies.2 It may seem strange to find larger SEPs associated with a sensory deficit, but the presence of ephaptic spread in the lemniscal pathway may account for the larger afferent input to the cortex, as well as for the paraesthesias. We may postulate that this larger sensory input may have triggered an abnormal motor command resulting in movement disorder with features favouring dystonia over those seen with sensory deafferentation (that is, pseudoathetosis). This report may confirm the central role of abnormal sensory processing in the pathogenesis of dystonic symptoms.3

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References


Eencephalomyelolradiculoopathy associated with wasp sting

Although stings from wasps can cause severe allergic reactions, including anaphylaxis, neurological complications of wasp stings are rare.2 There are, however, various interesting case reports of acute myelitis, acute encephalitis, encephalomyelolradiculoopathy, optic neuropathy,3 cerebral infarction,4 and acute inflammatory polyradiculopathy.5 We report here the case of a young man who developed encephalomyelolradiculoopathy after being stung by a wasp.

Case report

An 18 year old man was referred to Ramathibodi Hospital with impaired consciousness and quadriparesis. He had been stung by a wasp 6 days previously on the right cheek and had mild swelling and tenderness over this area. On the following day, he suffered from headache, fever, and nausea and was admitted to a regional hospital. Three days later, he was drowsy and had urinary retention. Then he developed a generalised tonic–clonic seizure lasting two to three minutes. He was intubated and referred to us. At Ramathibodi Hospital, he was comatose, quadriplegic, and areflexic. A lumbar puncture was done. The CSF pressure was 360 mm H2O and fluid analysis showed mononuclear cells (9/mm3), a protein concentration of 160 mg/dl, and CSF/blood sugar concentrations of 3.8/13.38 mmol/L. CSF and serum were tested for

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Figure 1 Cervical T2 sagittal section (A) and axial section at the level of the C5-C6 intervertebral space (B). The arrows indicate the small right posterior lesion.
Japanese encephalitis virus and dengue anti-body with negative results. The erythrocyte sedimentation rate was 65 mm/h. Magnetic resonance imaging of the brain and cervical cord showed multiple ill defined scattered lesions of hypointense signal in T1 weighted (T1W) and inhomogeneous isosignal intensity signal in T2 weighted (T2W) images involving both grey and white matter of medulla,pons, midbrain, basal ganglia, thalami,centrum semiovale, cortical grey matter, and cervical cord (fig 1). There was an absence of F waves in both median and ulnar nerves with absence of compound muscle action potentials on stimulating both tibial and peroneal nerves. Sensory nerve conduction was normal in median, ulnar, and sural nerves.

Methylprednisolone was given intrave-neously for five days. On the sixth day after starting treatment, he regained consciousness with limited eye movement and quadriplegia. A month later, a plasma exchange was performed. The power of the upper extremities gradually improved. Three months after admission, he was discharged with residual paraplegia with sensory level at T1 and admission, he was discharged with residual paresis. The power of the upper extremities starting treatment, he regained consciousness with limited eye movement and quadriplegia. When he was examined during his hospitalisation, he was noted to have bilateral ptosis and miosis. Sensory nerve conduction was normal in median, ulnar, and sural nerves.

Figure 1 Magnetic resonance imaging (T2 weighted) of the brain and cervical cord showing multiple ill defined scattered lesions of inhomogeneous isointense signal involving both grey and white matter of medulla,pons, midbrain, basal ganglia, thalami,centrum semiovale, cortical grey matter, and cervical cord.

Debrisoquin hydroxylase gene polymorphism (CYP2D6*4) in dementia with Lewy bodies

After Alzheimer’s disease, dementia with Lewy bodies (DLB) is probably the second most common cause of dementia among the elderly, having been shown to account for around 20% of cases at necropsy. Pathologically, DLB is characterised by the presence of Lewy bodies within the cerebral cortex, especially the parahippocampal gyrus, cingulate gyri, and insular cortex. Temporal, extratemporal, and subcortical grey matter is also involved. In addition, within brain stem nuclei, principally the substantia nigra and locus coeruleus. Nonethe-less, histopathological changes classically associated with Alzheimer’s disease (amyloid plaques and neurofibrillary tangles) are frequently widespread within the cerebral cortex of patients with DLB. 3

Although most cases of DLB appear to arise sporadically, cases with a previous family history of similar disorder are known, suggesting that genetic factors may contribute to the risk of developing disease. It is well recognised that cases of DBL, especially male, show an increased frequency of APO E ɛ4 allele, 1–10 although possession of this allele is not associated with an accompanying Alzheimer’s disease type pathology, 11 with DBL cases without Alzheimer’s disease type pathology having a normal APO E ɛ4 allele frequency. 10 Some genetic association studies, however, suggest that cases of DLB, especially male, show an increased frequency of APO E ɛ4 allele per se is unlikely to contribute to the generation of the Lewy body component of the pathological spectrum. 5

We have examined the frequency of the CYP2D6 *4 allele of the debrisoquin hydroxylase gene (DBH) in 53 patients with DBL. The clinical diagnosis of DBL was made in accordance with the consensus criteria of McKhann et al. 2 Twenty five of the patients have died, and pathological examination of their brains (DMAM) confirmed the clinical diagnosis in every instance. Genomic DNA was extracted from blood (in living patients) or brain tissue (in necropsy cases) by standard methods. DBH and APO E and genotyping were performed according to standard methods. 3

Differences in APO E ɛ4 allele and DBH CYP2D6 *4 allele frequency between patient and control groups were analysed by Fisher’s exact test. As previously reported, 2 the APO E ɛ4 allele frequency was significantly increased (compared to normal controls) in both clinical and pathological DLB groups, separately or combined (table 1). However, in agreement with previous reports, 9 there were no significant differences in frequency of CYP2D6 *4 allele of DBH gene between DLB cases (clinical or pathological groups (separately or combined))

References

and control subjects. Neither were there any differences in age at onset of disease or (in the pathological cases) duration of illness between DLB cases with and without mutant CYP2D6*4 allele. Cases with CYP2D6*4 allele were no more likely to show any, or more severe, Alzheimer’s disease type pathological changes than those without. Hence, in this present series of cases of DLB we have not been able to confirm possession of CYP2D6*4 allele in the pathogenesis of the disorder, either in terms of generating Alzheimer’s disease or Lewy body type pathology or in influencing the age at onset or duration of the illness. We therefore conclude that possession of CYP2D6*4 allele of DBH gene does not act as a risk factor for DLB.

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Table 1 Frequency of APO E alleles and DBH alleles and genotypes in different DLB groups and controls

<table>
<thead>
<tr>
<th>APO E alleles</th>
<th>DBH Alleles</th>
<th>Genotypes</th>
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<tbody>
<tr>
<td>x2 x3 x4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N M</td>
<td>NN NM NM MM</td>
<td></td>
</tr>
<tr>
<td>DBL clinical</td>
<td>0.04 0.57 0.39*</td>
<td>0.88 0.12</td>
</tr>
<tr>
<td>DBL pathological</td>
<td>0.02 0.46 0.52*</td>
<td>0.85 0.15</td>
</tr>
<tr>
<td>DBL combined</td>
<td>0.03 0.52 0.45*</td>
<td>0.87 0.13</td>
</tr>
<tr>
<td>Controls</td>
<td>0.06 0.8 0.14</td>
<td>0.81 0.19</td>
</tr>
</tbody>
</table>

1Control APO E data (n=35 cases) from Pickering-Brown et al [3]; control DBH data (n=720 cases) from Smith et al [4].
*p<0.01 v controls.
DLB, dementia with Lewy bodies; N, normal allele; M, mutant (CYP2D6*4) allele.

References

Meningioma presenting as stroke: report of two cases and estimation of incidence

Meningioma is the most common extra-axial brain tumour in adults and frequently originates in the suprasellar, frontobasal, temporo-basal, sphenoid wing, or petroclival regions. Tumours situated in these locations often involve an intracranial portion of the internal carotid artery (ICA) and may compromise cerebral blood flow. While transient cerebral ischaemia has been recognised as a complication of skull base meningiomas, to our knowledge, there are no documented cases of a meningioma causing stroke by ICA occlusion. We report two cases of meningioma presenting with cerebral infarction as a result of carotid artery compression and estimate the incidence of meningioma related cerebral ischaemia by this mechanism at our institution.

Case reports

Patient 1
A 49 year old right handed man experienced two weeks of left upper extremity weakness. Brain magnetic resonance imaging (MRI) reportedly revealed a right sided mass involving the cavernous sinus, and the patient was referred for a neurosurgical consultation. Two days later the patient noted a sudden increase in symptom severity and presented to an outside hospital. Neurological examination revealed a left homonymous hemianopia, left hemiparesis, and decreased sensation on the left upper extremity. MRI demonstrated a subacute right middle cerebral artery (MCA) territory infarct. There appeared to be fresh thrombosis in the right cavernous ICA. The patient was unable to sit up. Brain MRI revealed an acute right parietal region infarct, as well as a large mass, consistent with a meningioma, originating from the olfactory groove and encasing the right ICA at the apex of the right orbit (fig 1C). The mass also compressed the right optic nerve. Cerebral angiography demonstrated near occlusion of the right distal ICA (fig 1D) with the majority of perfusion to the right hemisphere being supplied by cross filling from the left ICA. Transoesophageal echocardiography was normal without evidence of embolic source. Neuro-ophthalmological examination revealed no evidence of emboli. A comprehensive serum hypercoaguable panel revealed no abnormalities. The patient underwent complete tumour resection. Over the next several weeks he recovered most neurological function but was left with no vision in the right eye and persistent left arm numbness.

Discussion
Meningiomas are prevalent brain tumours commonly located at the skull base. By virtue of their position, these tumours have the potential to affect portions of the ICA and compromise cerebral blood flow. Previous reports have suggested that meningiomas cause carotid artery compression and produce transient neurological symptoms including loss of consciousness, hemiparesis, parasthesias, and global amnesia. To our knowledge, however, there has never been a documented case of cerebral infarction as a result of meningioma related ICA compression.

We present two patients with cerebral infarction attributable to meningioma related ICA involvement. In case one, imaging after the first ischaemic episode demonstrated a large cavernous sinus meningioma surrounding and occluding the right ICA. MRI after the second ischaemic episode suggested stump thrombosis in the cavernous ICA. The stroke was probably attributable to both haemodynamic hyperperfusion as well as artery to artery embolisation. In case two, imaging demonstrated a large ollary groove meningioma encasing the right ICA with near occlusion of the vessel. It seems his stroke also occurred because of a combination of hyperperfusion and thromboembolism. Neither of these patients had evidence of vasculopathy or another aetiology for stroke.
Although meningiomas commonly involve the ICA, they rarely present with symptoms of cerebral ischaemia. These tumours typically do not change vascular patency even when completely encasing the ICA and its bifurcation into the MCA and anterior cerebral artery. It may be possible that meningiomas, being slow growing and non-invasive, do not exert sufficient external force to significantly compress the high pressure arterial vasculature. In addition, the ICA vessel wall is thick with a muscular media segment, thereby offering substantial resistance to vascular compromise. By comparison, cortical veins and dural sinuses, being low pressure compartments with thin walls, are frequently compromised by meningiomas.7 The tumour’s slow growth rate, however, allows for development of substantial collateral drainage, and as a result, cortical infarction attributable to venous insufficiency has only been reported postoperatively after injury to these compensatory pathways.7

The rate at which meningiomas present with symptoms of cerebral ischaemia is unknown. In an attempt to estimate the incidence at which meningiomas manifest symptoms of cerebral ischaemia by ICA compression, we reviewed retrospectively the medical records of 1617 patients with meningiomas evaluated by the surgical neuropathology service at our institution from 1985 to 2001. We identified three patients with meningioma involvement of the ICA as well as neurological symptoms that could be attributed to ICA compression. The first patient had a parasellar/medial sphenoid wing meningioma that narrowed the right ICA within the cavernous sinus and presented with progressive left hemiparesis. The second patient had a petroclival meningioma that encased the left ICA and presented with right upper extremity paresthesias. The third patient had a frontobasal meningioma that involved the right ICA and presented with evolving left hemiparesis. Thus, while meningiomas frequently involve intracranial portions of the ICA, we estimate the incidence of meningioma related cerebral ischaemia by carotid artery compression to be only 3 of 1617 tumours or 0.19%. In conclusion, we describe two cases of cerebral infarction as a result of carotid artery compression by a meningioma. We hypothesise that meningiomas typically do not compromise the ICA significantly because of the slow growth rate and non-invasive nature of the tumour, as well as the high arterial pressures of the ICA. Consequently, cerebrovascular insufficiency is an exceedingly uncommon presentation for meningioma.

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References

Parkinsonism associated with a serotonin and noradrenaline reuptake inhibitor, milnacipran

Milnacipran is a new class of antidepressant, a dual serotonin (5-HT) and noradrenaline (norepinephrine) reuptake inhibitor (SNRI). It shows no affinity for neurotransmitter receptors.7 The use of selective serotonin reuptake inhibitor (SSRI) has been associated with the occurrence and worsening of parkinsonism.1 7 However, SNRI induced parkinsonism has not been reported. A case is reported here in which severe parkinsonism occurred in association with the use of milnacipran.

A 83 year old woman was prescribed 200 mg of etidronate disodium once daily, and 0.23 µg of calcitriol for osteoporosis. In July 2001, she was prescribed 15 mg of milnacipran twice daily to alleviate her depressive state. Four months after starting milnacipran, she developed gait disturbance and tremors of the fingers and hands. Her family noticed tilting of her trunk to the left. The gait gradually deteriorated. In December 2001, she became unable to walk unaided. No other medications had been previously prescribed. She was referred to our clinic.

On examination, she was alert. Her face was expressionless, and she spoke in a low voice. Her cranial nerve functions were intact. The rigidity was more marked in the proximal limbs, which showed no obvious laterality. The voice was expressionless, and she spoke in a low state. Four months after starting milnacipran, she was prescribed 15 mg of milnacipran. In a matter on both sides. Parkinsonism has not been reported. A case is suspected, milnacipran was withdrawn. In a

Figure 1  [A] Coronal T1 weighted MRI with gadolinium demonstrating a meningioma encasing the internal carotid artery (ICA) within the right cavernous sinus. (B) Cerebral angiography with right common carotid artery (CCA) injection demonstrating occlusion of the right ICA and radiographic blush from the surrounding meningioma. (C) Coronal T1 weighted MRI with gadolinium demonstrating a meningioma encasing the right ICA at the apex of the right orbit. (D) Cerebral angiography with right CCA injection demonstrating virtual occlusion of the distal right ICA.
few days, she could walk without assistance. Four weeks after withdrawal of the drug, she had slight rigidity and mild bradykinesia. Treatment with 300 mg of L-dopa and 30 mg of carbidopa failed to further improve her motor function. Thus, it was unlikely that she had Parkinson’s disease. A rechallenge procedure with milnacipran was not done, for she was no longer depressive. Because the temporal relation between the ingestion of milnacipran and the occurrence of parkinsonism was so noticeable, it is highly probable that milnacipran caused the severe parkinsonism. Because milnacipran is not metabolised by the hepatic cytochrome P450 system, it is unlikely also found to elicit depression, disorientation and calciotrol affected plasma concentration of milnacipran.

Although several lines of evidence suggest that dopamine release in the striatum is regulated by serotonin, the effects of serotonin and SSRIs on dopamine release in the striatum of normal animals are disputed. Some studies have demonstrated that stimulation of the 5-HT(1A) receptors inhibits dopamine release and facilitates the hydroxylation in the striatum. In the striatum of the animals with nigrostriatal dopaminergic denervation, 5-HT(1A) receptor density was upregulated. The density of dopamine D2 receptors in the striatum was increased after repeated administration of milnacipran. Infections in the basal ganglia might have impaired such adaptive changes in the dopaminergic system, rendering the patient susceptible to milnacipran induced paresis or parkinsonism. To my knowledge, this is the first reported case of parkinsonism associated with the use of SNRI. Clinicians should be aware that not only SSRI but SNRI can cause severe parkinsonism.

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References


The relation between daytime sleepiness, fatigue, and reduced motivation in patients with adult onset myotonic dystrophy

Daytime sleepiness, apathy, and lack of motivation are established clinical manifestations of myotonic dystrophy. A recent study showed that modafinil reduced daytime sleepiness and average sleep latency in a group of nine patients with myotonic dystrophy. This finding suggests that daytime sleepiness in patients with myotonic dystrophy and without obstructive sleep apnoea might be central in origin. A magnetic resonance imaging study indeed found evidence for a possible association between daytime sleepiness and C-fibre abnormalities in myotonic dystrophy and excessive daytime sleepiness. Although several studies have measured levels of fatigue with validated questionnaires in different neurological patient populations, fatigue questionnaires have not yet been related to the symptoms of daytime sleepiness in myotonic dystrophy. With the results of the modafinil study mentioned above in mind, our goal was to test the relations between excessive daytime sleepiness, experienced fatigue, and reduced motivation.

Methods

Patients

The study was conducted at the outpatient clinic of the Neuromuscular Centre Nijmegen, based at the Institute of Neurology of the University Medical Centre in Nijmegen in the Netherlands. Consecutive ambulant patients with a genetically confirmed diagnosis of (adult onset) myotonic dystrophy and an expanded DNA repeat at chromosome 19q13.3 (DM1) were invited to take part. Fatigue was not a criterion for inclusion, and the patients came to the hospital for their regular visits. Those willing to participate were asked to complete the questionnaires at home and then send them back to the hospital.

Data were collected on 32 patients (16 female/16 male), mean age 43.8 years (range 22 to 73), and mean complaint duration 10.4 years (range 1 to 35). Myotonia and muscle weakness were rated using the five point muscular disability rating scale (MDRS). The scores in this group ranged from 0 (absent myotonia and muscle weakness) to 4 (severe proximal muscle weakness and wheelchair dependency), and the median (SD) MDRS scores for the group was 2.3 (1.1) (range 0 to 4).

Results

Daytime sleepiness

Three items (Nos 2, 5, and 7) of the subscale “sleep/rest” of the sickness impact profile refer specifically to the patient’s daytime sleepiness. Three of these items (“I feel continuously like dozing off”, “I am often hanging around after asleep”, “I sleep more during the day”) were summed, and a score > 0 was taken as an indication of increased sleepiness.

Fatigue severity

The subscale “fatigue severity” of the checklist individual strength (CIS) measures the experience of fatigue associated problems during the previous two weeks. The CIS-fatigue severity scale contains eight items that can be scored on a seven point Likert scale. Scores can range from 8 to 56, with higher scores indicating more severe fatigue, and scores exceeding 40 points are considered to indicate severe fatigue. 1,4,5

Reduction motivation

The CIS subscale “reduction motivation” contains four items that are also scored on a seven point Likert scale (score range 4 to 28). Higher scores (range 4 to 28) are indicative of taking less initiative and of decreased motivation. 6

Statistics

Independent t tests were used to compare the groups of patients with and without sleepiness symptoms with respect to their mean CIS-fatigue, CIS-lack of motivation, and MDRS scores. Significance testing was two sided, with α set at 0.05.

Discussion

Almost one third of this group of consecutive, ambulatory, adult onset myotonic dystrophy patients reported daytime sleepiness. This proportion is comparable with that in the study by Rubinsztejn et al, in which 39% of 36 adults with non-congenital myotonic dystrophy were identified as hypersomnolent. Another study also found that patients with myotonic dystrophy or Charcot-Marie-Tooth disease reported more daytime sleepiness than healthy controls, but that the majority of patients with myotonic dystrophy had day time sleepiness scores below the proposed cut off on the Epworth sleepiness scale. In the two daytime sleepiness studies mentioned in our introduction, only small numbers of patients were studied (9 and 11). 7,8 So comparisons of the incidence of daytime sleepiness are rather difficult. However, the fact that we studied consecutive patients makes a bias towards those with fewer symptoms of daytime sleepiness unlikely.

The mean fatigue scores of both the sleepiness group and the non-sleepiness group exceeded the cut off for abnormal fatigue and thus warrants a more extensive study of possible determinants of abnormal fatigue in this multisystem disorder. The findings that the fatigue scores were increased independently of sleepiness, and the fact that neither symptom was associated with the MDRS, suggests that different pathophysiological mechanisms underlie these clinical manifestations. Further assessment of the relation between these independent sympotms, and especially the endocrinological and neurological status of the patients is required. Post hoc assessment of 21 of our group of patients showed that none of them suffered from thyroid dysfunction, while the prevalence of abnormal sleepiness (38%) and the mean fatigue score of these 21 patients resembled those of the 11 other patients on whom no thyroid function data were available. These findings suggest that abnormal sleepiness or fatigue may occur in myotonic dystrophy despite normal thyroid function.
In the light of these results we would like to advocate the simultaneous use of both daytime sleepiness and fatigue outcome measures in future treatment and fatigue studies.

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