reported tongue sores or lip oedema as a putative side effect following BT injection, nor have we ourselves observed similar mucosal reactions in any of our cases. On the other hand, many viruses, predominantly herpes simplex types, varicella zoster and various coxsackie types produce oral manifestations resulting in vesicles or ulcers, or both. Together with enanthemas, these changes may or may not be pathognomonic for a number of other infectious agents.⁵ Without further information, appearance of tongue sores and lip oedema in this case cannot further be clarified. It seems possible that they had appeared unrelated to a drug reaction as a common or uncommon stomatological infection, with or without upper pharyngeal/respiratory infection.⁵

The authors use the sequence of clinical events and the neurophysiological findings as their main argument for a relationship between BT injections and upper brachial plexopathy. From this sequence, however, the plexopathy could be considered unrelated to the BT injections as well. The following two arguments, however, do not preclude an immune-mediated mechanism for its occurrence.

Firstly, plexopathy started with irradiating neck pain that, after a free interval of 23 days, was followed by weakness of selected shoulder and arm muscles. Despite the generally assumed clinical similarity of immune to non-immune forms of brachial plexopathy, this interval between pain and onset of weakness is frequently significantly longer in non-immune cases.⁶ Persistence of pain at the onset of weakness, on the other hand, is seen more frequently in the serogenetic forms.⁷

Secondly, the haemagglutinin-toxin complex of the *Clostridium botulinum* type A administered has strong antigenic and biochemical similarities to the toxoid of *C. tetani*.⁸ In accordance with everyday neurological experience, however, vaccine-induced plexopathies from the toxoid form of *C. tetani* are extremely rare.⁶ Given the worldwide, billion-fold application of tetanus toxoid for many decades, it seems improbable that vaccine-induced complications following BT injections at the peripheral nervous system will occur at a conspicuously higher rate than with tetanus toxoid.

BT is a new therapeutic agent with a high level of medical surveillance. Medical observation, therefore, will link any evidence of a possible adverse event to the administration of such an agent; this is even more likely, if the event represents a condition with a generally ill-defined aetiology, such as the non-serogenetic or non-vaccine-induced forms of ("idiopathic") brachial plexopathy.⁷ Analyses of such cases must take into account selection biases, before further conclusions are drawn.

In our opinion, the above documentation does not sufficiently rule out the mere coincidence between BT injections and the bilateral brachial plexopathy. As BT is one of the most important novelties of neurological treatment in recent years, possible adverse effects in its use merit close attention, but should be documented as completely as possible.

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- 1 Sampaio C, Castro-Caldas A, Sales-Luis ML, Alves M, Pinto L, Apolinario P. Brachial plexopathy after botulinum toxin administration for cervical dystonia. *J Neurol Neurosurg Psychiatry* 1993;56:220.
- 2 Jankovic J, Brin MF. Therapeutic uses of botulinum toxin. *N Engl J Med* 1991;324:1186-94.
- 3 Leading article. Botulinum toxin. *Lancet* 1992;340:1508-9.
- 4 Tsui JKC, Eisen A, Stoessl AJ, Calne S, Calne DB. Double-blind study of botulinum toxin in spasmodic torticollis. *Lancet* 1986;ii:245-7.
- 5 Archard HO. Stomatologic disorders. In: Fitzpatrick TB, Eisen AZ, Wolff K, Freedberg IM, Austen KF, eds. *Dermatology in general medicine*. New York: McGraw-Hill, 3rd edn, 1987:1152-238.
- 6 Gathier JC, Bruyn GW. The vaccinogenic peripheral neuropathies. In: Vinken PJ, Bruyn GW, eds. *Handbook of clinical neurology*, Vol. 8. Amsterdam: North-Holland, 1970:86-95.
- 7 Gathier JC, Bruyn GW. Neuralgic amyotrophy. In: Vinken PJ, Bruyn GW, eds. *Handbook of clinical neurology*, Vol. 8. Amsterdam: North-Holland, 1970:77-85.
- 8 Simpson LL. Molecular pharmacology of botulinum toxin and tetanus toxin. *Annu Rev Pharmacol Toxicol* 1986;26:427-53.

Sampaio et al reply:

In our patient we used 200 LD 50 U/l per ml of saline and in the first treatment, we injected 4 ml saline distributed in eight points: two in the right sternomastoid; three in the right posterior cervical region (splenius capitis and trapezius); and three in the left posterior cervical region (splenius capitis and trapezius).

After this first treatment there was no clinical improvement in the cervical dystonia; a booster injection was therefore performed 15 days later. At that time, 2 ml of a solution of 200 LD 50 U/l per ml of saline were injected in both posterior cervical regions.

Tongue sores and lip oedema are conspicuous adverse events. The causality between the use of a drug and their appearance is difficult to establish. Although there is an long list of drugs that may cause these events,¹ other aetiologies cannot be excluded. We admit that tongue sores would not be mentioned if not actively sought. Only four patients of 102 confirmed their presence. Their tongue sores were discrete but in our patient the complaints were serious.

We admit that it is impossible to be sure of a causal relationship between the use of BT and the development of brachial plexopathy but the possibility does exist.

- 1 Cohen L. Ulcerative lesions of the oral cavity. *Int J Dermatol* 1980;7:362-74.

Delirium and quantitative EEG

In the recent report by Jacobson et al¹ on conventional and quantitative EEG in the diagnosis of delirium in the elderly, the authors report that there are variables which distinguish normal from encephalopathic records (mini-mental State Examination and relative power in the alpha frequency band), and delirium from dementia (theta activity, relative power in delta and an index of EEG slowing). Jacobson et al stated that EEG with quantitative analysis has the potential to provide important information to supplement the clinical examination, in making an appropriate and timely diagnosis.

Our experiences generally agree with

studies by Koponen et al² and Jacobson et al¹—to our knowledge, the only two recent reports of quantitative EEG in delirium. Nevertheless, we wish to stress some points.

Firstly, in 1990, Inouye et al³ reported a valid and reliable instrument in the detection of delirium, confusion assessment method (CAM). This consists of nine criteria from DSM-III-R and can be completed in less than five minutes.

Secondly, some qualitative changes seen in "raw EEG" (triphasic waves and focal and diffuse epileptic discharges) may not be recognised if we used the quantitative EEG alone. In particular, specific EEG patterns, including periodic lateralised epileptiform discharges suggestive of focal intracranial causes of ACS,⁴ and diffuse abnormal EEG activity (triphasic waves, spikes, sharp waves, and spike and wave complexes)⁵ may not be recognised by using automated frequency analysis alone.

Thirdly, quantitative EEGs followed serially over time seem to show that delirium is less transient than currently believed: in our preliminary study, six of 10 patients had focal or diffuse increase of theta absolute power, or both, after the resolution of clinical features of ACS.

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- 1 Jacobson SA, Leuchter AF, Walter DO. Conventional and quantitative EEG in the diagnosis of delirium among the elderly. *J Neurol Neurosurg Psychiatry* 1993;56:153-8.
- 2 Koponen H, Partanen J, Paakkonen A, Mattila E, Riekkinen PF. EEG spectral analysis in delirium. *J Neurol Neurosurg Psychiatry* 1989;52:980-5.
- 3 Inouye SK, van Dyck CH, Alessi CA, Balkin S, Siegel AP, Horwitz RI. Clarifying confusion: the confusion assessment method. A new method in detection of delirium. *Ann Int Med* 1990;113:941-8.
- 4 Terzano MG, Parrino L, Mazzucchi A, Moretti G. Confusional states with periodic lateralized epileptiform discharges (PLEDs): a peculiar epileptic syndrome in the elderly. *Epilepsia* 1986;24:446-57.
- 5 Primavera A, Folis E, Abbruzzese M. Organic brain syndrome: diagnostic value of the EEG. *JAMA* 1983;250:34-5.

Diagnosis by axilla skin biopsy in an early case of Lafora's disease

Rubio et al¹ reported a young girl with a family history of Lafora's disease, myoclonus affecting the upper limbs and head, EEG abnormalities, no evidence of dementia and the presence of Lafora bodies in skin axillar tissue.

We describe² two siblings with Lafora's disease: one with epilepsy, myoclonus, EEG abnormalities, severe dementia and numerous Lafora bodies in the muscle and skin tissue; the other without dementia complained of one myoclonic seizure of the upper arms, and had EEG abnormalities and Lafora bodies in the muscle and skin tissues. We concluded that the diagnosis of Lafora's disease by skin and muscle biopsy is possible in the early stages of the disease, when there are myoclonic epilepsy and EEG abnormalities, and before the onset of dementia.

In our case of Lafora's disease the diagnosis was made in an earlier clinical stage