Thyrotoxic Hashimoto’s encephalopathy

Thyrotoxic encephalopathy is an uncommon but well-recognized complication of thyrotoxicosis. It is characterized by a wide range of neurological symptoms and signs, including cognitive impairment, memory loss, agitation, delirium, and psychosis. The pathophysiology of thyrotoxic encephalopathy is not fully understood, but it is thought to involve a combination of factors, including cerebral shrinkage, reduced cerebral blood flow, and increased cerebral metabolic rate. Thyrotoxic encephalopathy is typically associated with high levels of thyroid hormones and autoantibodies to thyroid peroxidase or thyroglobulin. Treatment is usually aimed at controlling the thyroid hormone levels and managing the neurological symptoms. Thyrotoxic encephalopathy is a rare but potentially serious complication of hyperthyroidism, and early recognition and intervention are crucial for optimal outcomes.
Letters to the Editor

Traemia in the cerebral salt wasting syndrome is accompanied by hyponatremia.1,2

We report a patient with cerebral salt wasting after aneurysmal subarachnoid haemorrhage who showed remarkable changes in fluid homeostasis during surgery. A 46 year old woman was admitted with severe headache and vomiting. Physical examination was unremarkable. Brain CT showed a subarachnoid haemorrhage with blood in the suprasellar cisterns and the left Sylvian fissure. Two days later she developed mild hyponatraemia and polyuria; salt and fluid loss were fully compensated by 0.9% NaCl infusion. On day 9 she was found unconscious with respiratory failure and bradycardia and CT disclosed a recurrent subarachnoid haemorrhage in the left Sylvian fissure. Two days later she developed a progressive polyuria of up to 21 200 ml per day (on day 22) and a 24 hour renal sodium loss of 2630 mmol. The plasma sodium range was between 128 and 142 mmol/l, and the colloid osmotic pressure was between 18.7 and 24.0 mm Hg. Serum ADH concentrations were normal. Treatment with fludrocortisone had no effect on renal sodium loss. Despite the severe hyponatraemia plasma atrial natriuretic protein concentrations were within the normal range (up to 11 pmol/l, normal 3–23 pmol/l); atrial natriuretic protein in CSF was not assessed. Daily transcranial Doppler sonography was indicative of cerebral vasospasm and therefore angiography was postponed until day 17. On day 18 the left middle cerebral artery was disclosed, which was successfully clipped on day 24. Whereas the diuresis 24 hours before and after the neurosurgical procedure was 600–700 ml/hour, the mean intraoperative (from incision to the last suture) production of urine was 150 ml/hour. The largest reduction in diuresis was seen while the dura was open. Soon after suturing the dura, urine production rose to preoperative values. Two days after surgery diuresis decreased remarkably and was back to normal on the fourth day after operation. Repeated measurements of plasma sodium were also normal. The patient had fully recovered two months after the operation.

Our patient had a very pronounced urinary sodium loss of up to 60 g per day. Opening of the dura resulted in a decrease in diuresis of 77.5%. Both a reactive increase of CSF production and a decrease in the intracranial pressure may have been important. Because an increase of atrial natriuretic protein in CSF (and maybe other humoral factors) results in a decrease in CSF production and an increase in urinary protein concentrations, it may result in a decrease in atrial natriuretic protein, resulting in a decrease in natriuresis.

In patients with subarachnoid haemorrhage Döcz and Bodosi found a linear correlation between cerebral salt wasting and atrial natriuretic protein concentrations in CSF.3 So lowering the intracranial pressure might result in reduced concentrations of atrial natriuretic protein in CSF and lead to an increase in CSF production and a decrease in natriuresis.

If either assumption is correct, continuous CSF drainage—for example, by an external lumbar drain—may be an effective treatment for the cerebral salt wasting syndrome, especially in more severe cases.

A patient with cerebral autosomal dominant arteriopathy with subcortical infarcts and leuкоencephalopathy (Cadasil) confirmed by sural nerve biopsy

“Cerebral autosomal dominant arteriopathy with subcortical infarcts and leuкоencephalopathy” (Cadasil) is a newly defined syndrome characterised, in the absence of hypertension, by recurrent subcortical ischaemic strokes and by peculiar non-amyloid, non-arteriosclerotic angiopathy of cerebral vessels. On MRI circumscribed subcortical ischaemic lesions and diffuse areas of leuкоencephalosis are seen both in symptomatic and asymptomatic family members.4 Recently, genetic linkage analysis in two unrelated families has assigned the disease locus to chromosome 19q12 with the most likely location of the disease gene between D19S221 and D19S222.5

A few postmortem studies have been reported, showing predominant involvement of the cerebral white matter with diffuse leuкоencephalopathy of cerebral vessels. On MRI circumscribed subcortical ischaemic lesions and diffuse areas of leuкоencephalosis are seen both in symptomatic and asymptomatic family members.4 Recently, genetic linkage analysis in two unrelated families has assigned the disease locus to chromosome 19q12 with the most likely location of the disease gene between D19S221 and D19S222.5

We present a 55 year old woman with a history of recurrent pulmonary embolism and a feeling of heaviness in her left arm for about two days. Fifteen years later the patient described episodes of a burning sensation on her tongue and tingling as well as weakness of the left side of her face and her left arm. Six months later she complained of numbness and weakness of her left arm and leg, from which she recovered slowly. No risk factors such as arterial hypertension, diabetes, or migraine were reported. Neurological examination showed a slight left sided ataxia, hemiparesis, and hyporeflexia. CT disclosed a large right hemispheric haemorrhage which showed reduced cognitive performance and flexibility, a deficit in learning and memory, and abnormal visual constructional abilities which were compatible with a subcortical dementia. Brain MRI showed extensive hypodense oedematous white matter changes and demyelination involving both periventricular and subcortical regions (fig 1).

Family history showed that the mother of the patient died at the age of 52 with a history of a subcortical dementia that had MRI changes similar to the index patient, and one had had recurrent episodes of aphasia, headache, and hemiparesia. Six members of this family, three affected and three healthy, have been genotyped with eight chromosome 19 markers spanning the Cadasil interval. No recombinant was found with any of those markers. Maximum lod scores were obtained with markers D19S226, D19S253, and D19S1398, strongly suggesting that this family is linked to the Cadasil locus. At 30 year long survival of the sural nerve was processed for light and electron microscopy. Six fascicles were present. Around 120 small and large vessels were counted in the endoneurial and epineurial spaces. The largest epineurial arteries (size up to 100 μm) appeared normal. Small epineurial and endoneurial arterioles remained unchanged in paraffin sections. The arteriolar wall was not thickened on semi-thin sections and no increase in number of nuclei was evident. The perineurium was not thickened and there was no increase of endoneurial connective tissue. The density of myelinated fibres was 6600/mm2 (normal range for the sural nerve for this age 6000–8000/mm2). Myelin degradation products were not encountered.

Electron microscopy showed changes in a few epineurial vessels, consisting of electron dense material along the outer aspects of the vessel walls (fig 2A). Most of these granules were on the abluminal surface of pericytes and less often on endothelial cells. Most granules measured 0.2 to 0.5 μm in diameter. However, some were measured up to 1.2 x 0.8 mm. Dense deposits were frequently located in thickened basal laminae and were often pushing back the cell membrane of an adjacent pericyte (fig 2 B and C). Many dense deposits were round or oval but some were flat or disc shaped and oriented parallel to the cell surface. The total number of dense deposits ranged from none to five or six around a single vessel. Some were found in very small arterioles but most were in large capillaries or metarterioles (size 14–15 μm) consisting of endothelial cells surrounded by a normal basement membrane but without the presence of smooth muscle cells. In some vessels, the basal lamina surrounding the endothelial cells was clearly redundant and tortuous (not shown). Many pineocytic vesi­cles were found along and underneath the surface of cell membranes. Their density was not altered at the site of close apposition to the cell membrane with the electron dense granular deposits.

The presence of granular electron dense...