Letters to

posterior to postmortem were patients noid intensity the old (45 tumours circle of diameters cephalus of ventricles dilated shaped or eyes papilloedema (upper) area around the subarachnoid space...y...y~~~~~~~~~~~~~~~~.....Ssri,i

old normal subjects (18 eyes) was 0.58 (SD 0.02). The mean ratio in three patients (six eyes) with papilledema was 0.40 (SD 0.03). Brain MRI for three patients one month after the decompression surgery also showed ring shaped areas, the mean diameter ratio of which was 0.48 (SD 0.04).

Brain MRI with a T2 weighted fast spin echo sequence successfully showed the CSF within the sheath around the optic nerve in living humans as a non-invasive technique. A T2 weighted fast spin echo sequence with a surface coil and a fat suppression technique provides high enough resolution and speed to allow mean measurement. She could not manipulate the optic nerve complex in the orbital portion.

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Alzheimer's disease in a case of cortical basal ganglionic degeneration with severe dementia

Cortical basal ganglionic degeneration (CBGD) is a neurodegenerative disease with core features of both basal ganglionic and cortical dysfunction. CBGD typically presents as an akinetic rigid syndrome poorly responsive to levodopa, often with asymmetric limb dystonia. Signs of cortical dysfunction include limb apraxia, areflexia, and language disturbance. Cognitive function is characteristically preserved, even in the advanced stage of the illness. Dementia is so unusual as an early sign in pure CBGD that presentation with cognitive impairment has been proposed as a diagnostic criterion for the diagnosis. We describe a patient with clinical features of CBGD who presented with prominent, early dementia. Neuropathological examination confirmed the diagnoses of both CBGD and Alzheimer's disease.

A 72 year old woman presented with a six month history of gait disturbance, falls, and confusion. Examination showed cognitive impairment, pronounced rigidity in all four limbs, and left limb apraxia. Examination at the age of 74 disclosed that she was alert and cooperative, but unable to give any meaningful history. She was not oriented to day or year. Speech was slow but she could name objects, repeat, and follow a two step command. There was left/right confusion. Facial dystonia was apparent. All four limbs were very rigid, left more than right. Although strength was good in both arms, she was unable to voluntarily raise her left arm or to use her left hand for any skilled movement. Her left hand spontaneously assumed unusual postures suggestive of an alien limb phenomenon. She could not pick up a coin with her left hand but could pick up and identify a coin with her right hand. Her dementia precluded further assessment of cortical sensory deficits. There was no resting tremor. Muscle stretch reflexes were brisk at the left biceps but otherwise unremarkable. Plantar responses were equivocal. There were pronounced suck, snout, and bilateral grasp reflexes. With her left hand for her mouth, she could hold and stand independently. She walked with a small stepped shuffling gait, with the trunk flexed and the left arm held in a flexed, dystonic posture. Laboratory studies were normal. Cranial CT showed evidence of generalised cerebral atrophy, mild periven-tricular white matter hypodensity, and asymmetrically enlarged frontal horns of the lateral ventricles, more pronounced on the left. The patient deteriorated steadily with progressive motor impairment and inability to speak. She died aged 76, four and a half years after the onset of her disorder.

At necropsy, the brain (weight 1010 g) displayed moderate diffuse, symmetric frontotemporal atrophy and mild temporal atrophy. The lentiform nuclei were shrunken and discoloured and the thalamus was disorganised in mass. The cortex was a rusty hue. The pons, medulla, and cerebel-lum were grossly normal.

Microscopic examination of the cerebral cortex showed neuronal loss, most evident in layer 3, with spongiosis in layer 4, and pronounced in the parietal and frontal regions. Swollen, achromatic neurons or “barrel cells” (figure A) were seen in the deeper layers of the parietal cortex, particularly around the central sulcus and in other cortical areas. Neuronal degeneration with achromasia was pronounced in the globus pallidus and lateral thalamus, moderate in the putamen. There was selective degeneration of pigmented neurons in the substantia nigra, particularly the lateral portions. Some of the remaining nigral neurons contained lightly basophilic fibrillar inclusions (figure B, typical of “corticobasal inclusions,” whereas others contained homogeneous pale eosinophilic cytoplasm. Corticobasal inclusions were also present in the red nucleus and locus ceruleus. Swollen achromatic neurons were found in the red nucleus, periaqueuctal grey, pontomedullary tegmentum, basis pontis, olivary nuclei, and cerebellar dentate nucleus. Reactive gliosis paralleled the severity of neuronal loss.

Bielawschky's silver staining showed neuronal tangles and neuritic plaques in the cerebral neocortex and hippocampi (figure C). Maximum plaque densities were: frontal cortex 30–40/mm2; parietal cortex 15–20/mm2; temporal neocortex 20–30/mm2; occipital cortex 15/mm2. Neuritic plaques were common in the parietal, frontal, and left temporal regions.
Frequent neurofibrillary tangles were present in the subthalamic nucleus and lateral nucleus basalis of Meynert. There were no Pick bodies or Lewy bodies by silver staining or ubiquitin immunohistochemistry.

The typical clinical and pathological findings of CBGD were first described in 1968 as "corticodentatonigral degeneration with neuronal achromasia." In the past 10 years CBGD has emerged as a distinct clinical entity, more common than was initially appreciated. The parkinsonian features and focal cortical deficits of our patient were characteristic of CBGD: progressive rigidity, dystonia, akinesia, postural instability, and severe limb apraxia with elements of alien limb phenomenon particularly affecting the left upper arm. Pronounced early cognitive impairment in our patient suggested that her disorder was not pure CBGD despite the otherwise typical clinical features. The pathological diagnosis of CBGD was confirmed by (a) neuronal loss and gliosis in the frontoparietal cortex, lentiform nucleus, substantia nigra, and dentate nucleus; (b) swollen achromatic neurons ("balloon cells") in the perifollicular parietal cortex, basal ganglia, and brainstem nuclei; and (c) intraneuronal corticobasal inclusions in the substantia nigra, red nucleus, and locus ceruleus. In addition, there was moderately severe coexisting cortical Alzheimer's pathology.

The frontoparietal cortex is typically affected in CBGD and in Alzheimer's disease. The severity of our patient's dementia and the onset concurrently with apraxia and parkinsonian signs may be explained by an additive effect of the two neurodegenerative processes in the frontoparietal cortex. Indeed, the severity of neuronal loss in this region was remarkable. A similar additive effect has been proposed to underlie the rather frequent association of Alzheimer's disease and other parkinsonian disorders. In these cases, the onset of a primarily subcortical degeneration in the setting of pre-existing subclinical Alzheimer's pathology may be sufficient to produce overt dementia. Another observation concerning the distributions of CBGD and Alzheimer's disease pathologies was that cortical balloon cells were found only in the perifollicular cortex, which contained relatively few neuritic plaques. Sparing of the perifollicular region is typical of Alzheimer's disease, but this distribution of pathological lesions has not been described in other cases of CBGD. It is possible that the development of Alzheimer's pathology may have altered or prevented the formation of cortical balloon cells in the same region.

This case represents the first detailed clinico-pathological documentation of combined Alzheimer's disease and CBGD, although another case with pathological findings of both Alzheimer's disease and CBGD has been briefly mentioned. As CBGD has only recently been delineated as a distinct entity, it is likely that similar cases will be recognized in the future. Our patient shows that early dementia in an otherwise typical presentation of CBGD should suggest a coexistent cortical degeneration.

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Alzheimer's disease in a case of cortical basal ganglionic degeneration with severe dementia.
D A Eberhard, M B Lopes, J M Trugman and H R Brashear

J Neurol Neurosurg Psychiatry 1996 60: 109-110
doi: 10.1136/jnnp.60.1.109

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