evaluate aging-related tau astrogliopathy (ARTAG) we examined the collection at the University of Pennsylvania, consisting of blocks of the frontal parietal, temporal, and occipital cortices. Formalin fixed, paraffin-embedded tissue blocks were evaluated using anti-tau antibodies PHF-1 and AT8. In addition to neuronal and oligodendroglial tau pathology, granular/fuzzy astrocytes in the gray matter and thorn-shaped astrocytes (TSAs) in subpial location were also observed. Twenty-one out of 33 cases (63%) showed subpial TSAs diffusely along the cortical surface in one or more cortical regions. Accumulation of TSAs in the depth of the sulci were seen in 41% in the temporal, 7% in the frontal and 14% in parietal cortex. This was not associated with perivascular neuronal tau pathology in the depth of the sulci. Accumulation of TSAs in the depth of cortical sulci in this cohort is approximately 20 times more frequent than reported in a European aging cohort. The presence of subpial TSAs in the depth of cortical sulci in CTE and Guam PDC, and less frequently in aging brains, might suggest common mechanisms.

### Learning Objectives

- Describe the spectrum of neuropathology in Guam ALS/PDC
- Describe the frequency of tau positive cortical subpial thorn-shaped astrocytes

## Abstract 7

### Complex Protein Astrogliopathy in an Octogenarian

*G.G. Kovacs[1], S. Klotz[2], P. Fischer[3], M. Hinterberger[3], G. Ricken[2], S. Hönigschnabl[3], E. Gelpi[2]*

[1]University Health Network, Toronto, Ontario, Canada; [2]University of Vienna, Vienna, Austria; [3]Danube Hospital Vienna, Vienna, Austria

doi: 10.1017/cjn.2021.169

Combination of multiple neurodegenerative proteinopathies is frequent in the elderly. We report the case of an octogenarian who attempted suicide and deceased after hospital admission. Anatomical mapping was performed in several cortical and subcortical brain regions using antibodies against phospho-tau, 4R tau, 3R tau, phospho-TDP-43, ubiquitin, α-synuclein, Aβ and p62. Unexpectedly, histopathologic examination showed prominent subpial, subependymal, grey and white matter, and perivascular aging-related tau astrogliopathy (ARTAG) affecting cortical and subcortical brain regions. This pathology was associated with intermediate Alzheimer's disease neuropathologic change, cerebral amyloid angiopathy, Lewy-body-type and astroglial synuclein proteinopathy and a multiple system TDP-43 proteinopathy involving also the astroglia. This unusual case of extensive and widespread ARTAG with a complex multiproteinopathy may represent an independent disease entity in the elderly with tau astrogliopathy as the leading force.

### Learning Objective

- Recognize astroglial protein deposits in neurodegeneration

## Abstract 8

### Somatotroph Adenoma with Dual Transcription Factor Expression

*Shervin Pejhan[1], Stan VanUum[2], Neil Duggal[3], Brian Rotenberg[4], Michael Mayich[5], Robert Hammond[1,3], Qi Zhang[1,3]*

[1]Department of Pathology; [2]Department of Medicine (Division of Endocrinology); [3]Department of Clinical Neurological Sciences; [4]Department of Otolaryngology; [5]Department of Medical Imaging Schulich School of Medicine & Dentistry, Western University, London, Canada

doi: 10.1017/cjn.2021.170

A 20-year-old male presented with evidence of gigantism/acromegaly. Endocrinological investigations identified elevated growth hormone levels and a failed glucose tolerance test. Imaging revealed a macroadenoma expanding the sella with encroachment on the optic chiasm and cavernous sinuses. Trans-sphenoidal resection was undertaken and a gross total removal was achieved. Histopathological features were typical of a densely granulated somatotroph adenoma with abundant growth hormone expression, scattered prolactin expression and sparse examples of fibrous bodies. Unexpectedly, the adenoma not only expressed PIT-1 but also SF-1 transcription factors. This finding suggests that the adenoma may have been pluripotent. The prognostic significance of this finding is uncertain although the patient is stable from an endocrinological and imaging perspective approximately one-year post-op. A pituitary adenoma of this nature has not been previously reported. The recent literature on atypical transcription factor expression patterns and revisions to the classification of pituitary adenomas will be reviewed.

### Learning Objectives

- Appreciate the rarity of dual transcription factor expression in pituitary adenomas
- Rationalize the use of transcription factor characterization in the revised WHO classification of pituitary adenomas