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Clinical Image:

Carpal Tunnel Biopsy identifying Transthyretin Amyloidosis

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An 86 year–old woman underwent routine decompression for carpal tunnel syndrome following which a sample of tenosynovium was examined histologically. Amyloid deposits were identified on Congo red staining viewed under fluorescent light (A). Immunohistochemical staining confirmed that the amyloid deposits were transthyretin (TTR) type. She was referred to the National Amyloidosis Centre for further evaluation where she described a recent hospital admission for unexplained dyspnoea. Echocardiography showed normal systolic function, but a thickened intraventricular septum along with impaired global strain rate of -15.7% and a strain pattern consistent with cardiac amyloidosis. ^{99m}Technetium-3,3-diphosphono-1,2-propanodicarboxylic acid (^{99m}Tc–DPD) scintigraphy revealed Perugini grade 2 uptake of tracer in her heart (B). Gene sequencing revealed no mutations in the transthyretin gene. A diagnosis of wild type ATTR amyloidosis (ATTRwt) was made.

Carpal tunnel syndrome is a common early clinical manifestation of wild-type transthyretin amyloidosis, also known as senile systemic or cardiac amyloidosis. Among patients with cardiac ATTRwt amyloidosis attending our centre, 98% have had evidence of median nerve entrapment on neurophysiological studies and 48% have had a history of carpal tunnel decompression as much as 12 years prior to their typical presentation with advanced heart failure symptoms. Cardiac ATTRwt amyloidosis is currently diagnosed in only about 150 individuals in the UK each year, but post-mortem studies indicate that ATTRwt amyloid deposits are actually present in up to 30% of males over 80 years (1). Repurposing of ^{99m}Tc-DPD bone scintigraphy largely abrogates the need for diagnostic cardiac biopsy, showing substantial cardiac uptake in nearly all cases (2).

Carpal tunnel biopsy can readily identify ATTR amyloid deposition and may identify individuals at risk of developing cardiac ATTR amyloidosis, for which specific therapies are now in clinical trial (3).

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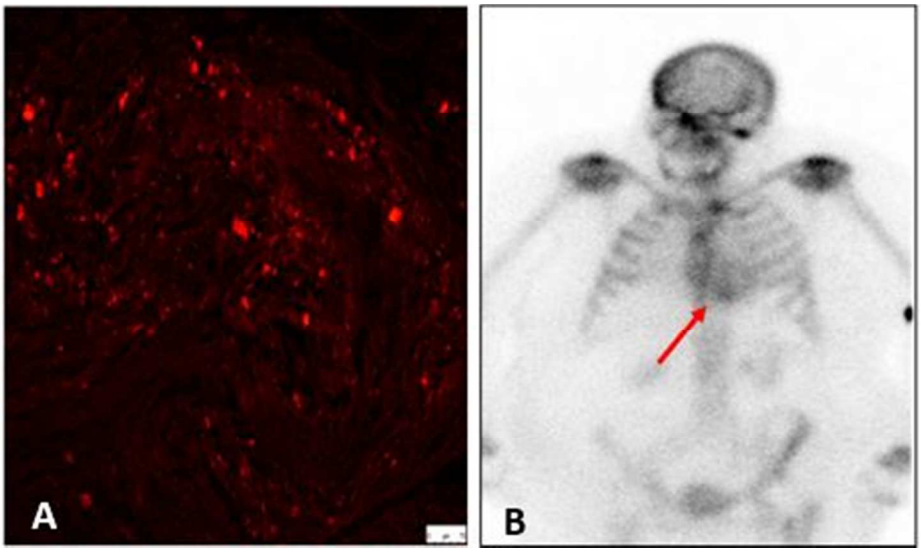

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