AMYLOIDOSIS AND KIDNEY TRANSPLANTATION – OUR EXPERIENCE

Đorđević G[1,4], Lidija Orlić [2,4]Markić D[3,4]

1Department of Pathology and Cytology, Clinical Hospital Center Rijeka; 2Department of Nephrology, Dialysis and Transplantation, Clinical Hospital Center Rijeka, Clinic of Urology, Clinical Hospital Centre Rijeka, 4Faculty of Medicine, University of Rijeka, Croatia

INTRODUCTION: Amyloidosis is a group of diseases characterized by the extracellular deposition of insoluble fibrils composed of misfolded aggregated proteins. Localized or systemic disease may occur de novo or secondary to infectious, inflammatory, or malignant conditions. Organ failure occurs due to the local impact on the tissue structure, but also because of cytotoxic effects of amyloid. Kidney involvement in ~1% can lead to end-stage renal disease (ESRD) and organ transplantation as replacement therapy. The aim of this presentation was to share our experiences with transplanted patients with amyloidosis as an underlying disease .

PATIENTS: In Clinical Hospital Center Rijeka from 1st January 2003 until 28th February 2023. 449 kidney transplantations (KT) were performed. Amyloidosis as the main cause of renal failure was diagnosed in 3 (0.7%) patients. Their clinical and biopsy data as well as KT outcome were retrospectively analysed.

RESULTS: During the observed period, two male and one female patient with the amyloidosis diagnosed by biopsy of the native kidney, were transplanted. Femal patient had AL, one male had transtiretin type of amyloidosis and in one patient we could not establish the origin of fibrills. At the time of the transplantation, patients were of 66, 68 and 80 of age and received deceased kidney transplant. In one patient dual KT was performed with delayed and never fully recovered graft function. This patient died shortly after KT and autopsy showed amyloid deposition in the arteries of the transplanted kidneys. The oldest patient died two years after successful KT because of urosepsis. The female patient is alive, eight years after KT, with good function of the graft.

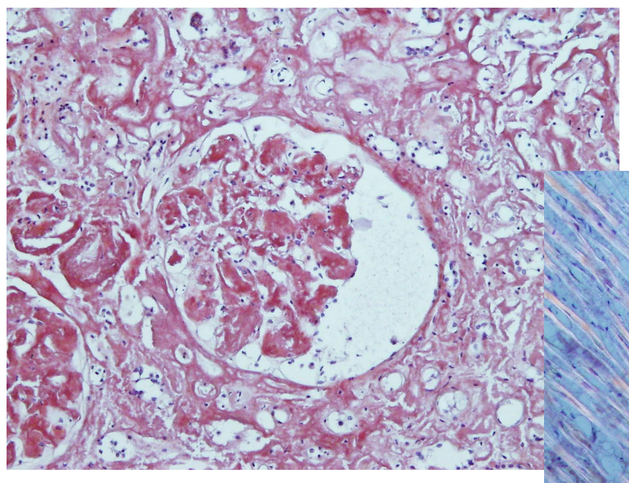

Fig.1A Microphotograp of amyloid deposits in glomeruli and tubulo-interstitium of the native kidney (Congo red , 100x)

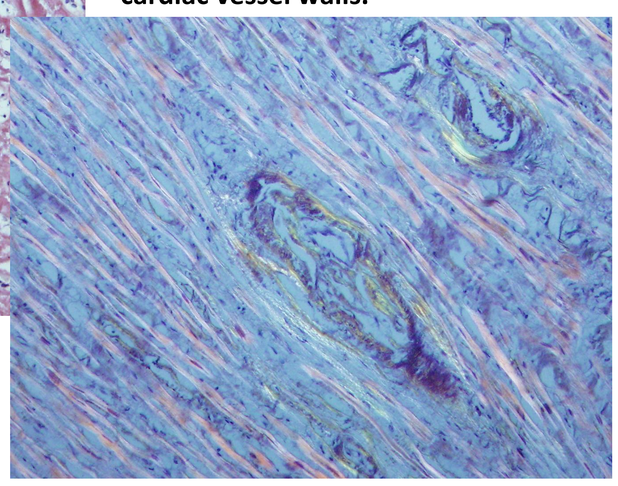

Fig 1BCongo red stain under polarized light (apple-green birefringence) in cardiac vessel walls.

MICROPHOTOGRAPHS show autopsy findings in our patient with dual KT with abundant amyloid deposits in native kidney(1A) and heart blood vessels whith green birefringence under the polarized light (1B). In patient acute Tcell mediated Banf IIA rejection was found in the previous graft biopsy, and active chronic cellular type rejection at autopsy 4 months later (2A;B). Intimal arteritis, hypertensive changes can be seen in the blood vessel wall (2C) where Congo staining also revealed discrete amyloid deposition (2D).

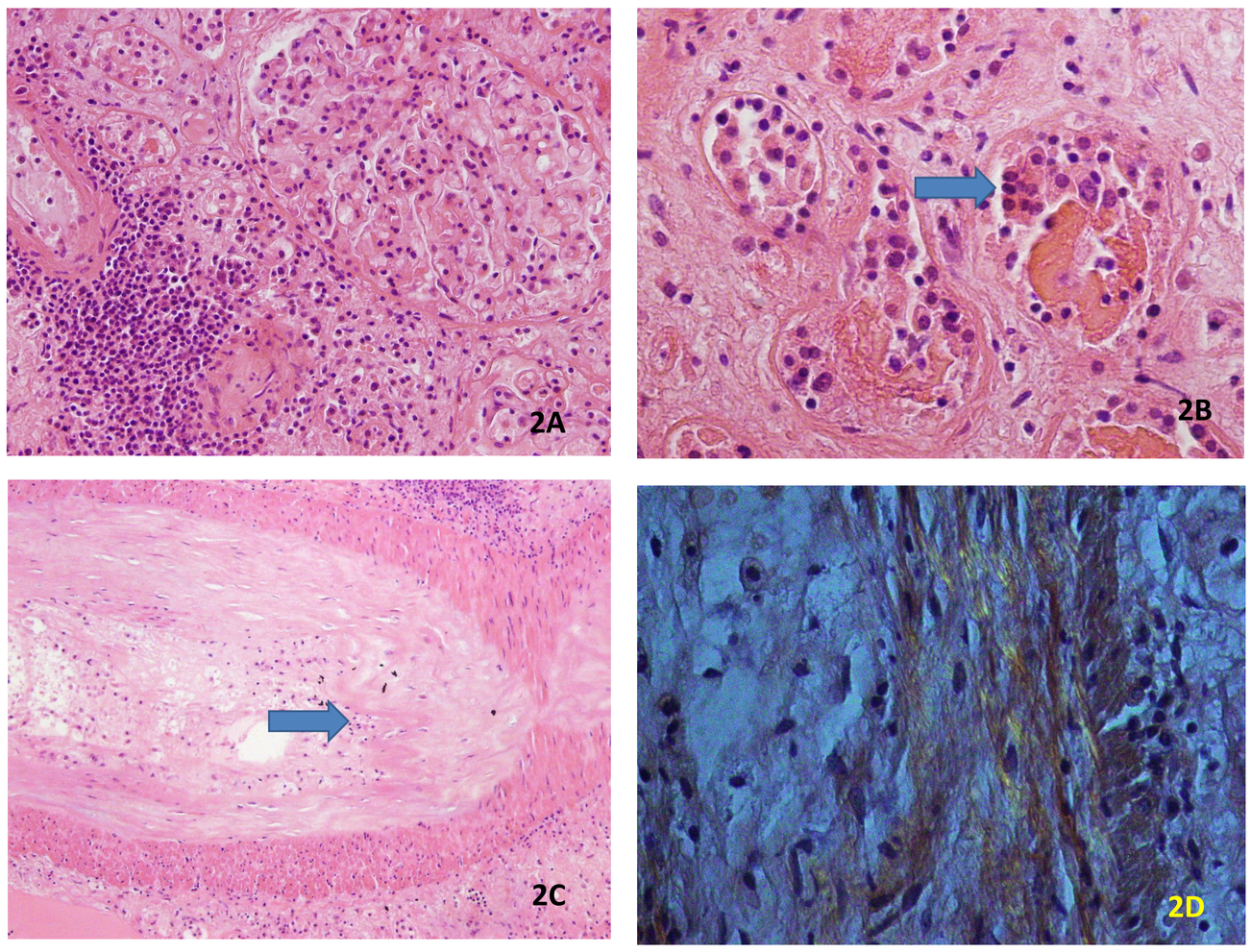

Fig 2. (A;B)Microphotography of active chronic cellular rejection of kidney transplant, arrow points to tubulitis (HE, 200x) (C)Disruption of the internal elastic lamina (arrowhead) is detected in transplant arteriopathy (he staining, 100x). Congo red stain under polarized light (apple-green birefringence 400x)

CONCLUSION: In our population amyloidosis is a rare cause of ESRD. KT is a possible and effective treatment. Transplanted patients must be closely followed because of the possibility of the amyloid deposition in graft soon after the transplantation. Larger studies indicate a shorter survival of patients on renal replacement therapy with a median survival of 2.1 years on dialysis and after kidney transplantation but are comparable to other high-risk subgroups. Recent studies show that transplant outcomes improve, especially in the group with AL amyloidosis due to better control of the underlying disease, which is also the case with our patient with a preserved allograft.

Steven Law, Oliver Cohen, Helen J Lachmann, Tamer Rezk, Janet A Gilbertson, Dorota Rowczenio, Ashutosh D Wechalekar, Philip N Hawkins, Reza Motallebzadeh, Julian D Gillmore, Renal transplant outcomes in amyloidosis, Nephrology Dialysis Transplantation, Volume 36, Issue 2, February 2021, Pages 355–365