Exceptional Case

Coiled-coiled domains as a mechanism to stop haemorrhage after renal biopsies

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Introduction

Nephrocystin (NPHP1), the gene for nephronophthisis type 1, is a protein featuring a coiled-coil domain [1]. The coiled coil is a common structural motif formed by \( \sim 3-5\% \) of all amino acids in proteins [2]. Nowadays, it is vital that busy nephrologists know such things. We recently were faced with a nephrological process that also relied on coiled domains, a more common occurrence but never before described for this purpose.

Case report

A 74-year-old woman underwent a routine percutaneous left renal biopsy at another hospital, the results of which were consistent with pauci-immune rapidly progressive glomerulonephritis. She had been admitted because of progressive dyspnea and haemoptysis. The creatinine concentration was 157 \( \mu \)mol/l, and she had protein in her urine. Heart failure was also observed since her pro-brain natriuretic peptide (Pro-BNP) level was 127 000 pg/ml (normal < 194 pg/ml).

She had antibodies against neutrophil myeloperoxidase (P-ANCA).

The woman was referred to our unit because of shock, a few hours after the procedure. The patient received volume resuscitation in the admitting room, and an abdominal CT was performed that revealed a large (> 1.5 l) left retroperitoneal haematoma. Her creatinine concentration had increased to 303 \( \mu \)mol/l, and she had protein in her urine. Heart failure was also observed since her pro-brain natriuretic peptide (Pro-BNP) level was 127 000 pg/ml (normal < 194 pg/ml). She had antibodies against neutrophil myeloperoxidase (P-ANCA).

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The lesion was 'coiled' successfully (Figure 1B), suggesting that this approach could be considered in other patients whose native renal biopsies go awry.

We are familiar with coiled-coil E-rich domains and try to train our younger colleagues in the latest molecular techniques [1,2]. However, sometimes it is worthwhile to recall that coils also work for other things [4].

Conclusions

Bleeding after kidney biopsies is a well-recognized complication. Embolization as a treatment for haemorrhage after a renal biopsy has been described, commonly for transplanted kidneys [3]. The coiling treatment has also been advocated under these circumstances [4]. However, reports regarding native kidneys have not appeared to our knowledge. Our surgical colleagues were reluctant to operate on this patient. They would have probably performed nephrectomy and haematoma drainage; the former halves renal function and the latter is fraught with hazards. We elected to follow an angiographic adventure since bleeding appeared to continue. We found a hitherto undescribed arterial injury. The kidney showed no evidence of damage, but the intercostal artery that was damaged also served to supply the spinal cord (Figure 1A). The lesion was 'coiled' successfully (Figure 1B), suggesting that this approach could be considered in other patients whose native renal biopsies go awry.

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Fig. 1. (A) Selective injection of a left intercostal artery. The upper arrow identifies the artery of Adamkiewicz, feeding the spinal cord that we absolutely did not want to compromise. The lower arrow is adjacent to a blush. Careful scrutiny reveals a thin vessel from the artery to the blush. (B) Our coiled-coiled domain is seen residing in the intercostal artery, far beyond the artery of Adamkiewicz. Thereafter, the bleeding stopped.

Conflict of interest statement. None declared.

References


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