

## Minimal change disease following influenza vaccination and acute renal failure: just a coincidence?

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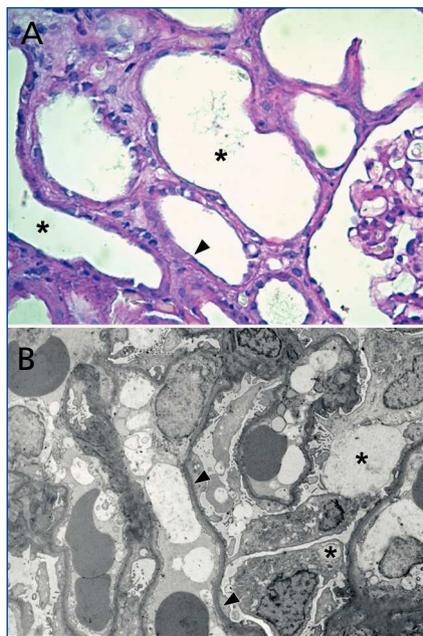
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### To the Editor,

Since, 1966 different reports have associated minimal change disease (MCD) with different immunogens<sup>1</sup> as well as the presence of acute renal failure (ARF) in the MCD,<sup>2</sup> which pathogenic mechanisms are being debated up to the present.

A 44-year old man was admitted to our hospital with edema in his face and legs and cervical lymphadenopathy which occurred 18 days after influenza vaccine (Agrrippal®, Novartis). The laboratory showed: creatinine 44mg/l, urea 106mg/dl. In the urinalysis was evident: proteinuria 4g/24h and hyaline casts. Serological test (ANA, DNA, ANCAp, ANCAc, C3, C4, HBsAg, HCV and HIV) were negative. Renal biopsy was performed. Light microscopy showed evidence of severe acute tubular injury (Figure 1 A) and a moderate, diffuse interstitial inflammatory infiltrate consisting of mononuclear cells and severe edema. The immunofluorescence did not show deposits of IgG, IgA, IgM, C3 and C1q. Ultrastructural examination showed diffuse foot-process effacement, microvillous transformation and cytoplasmic vacuolization without basement-membrane remodeling (Figure 1 B). Minimal change disease, acute tubular injury, and moderate active interstitial nephritis were diagnosed. The patient started on oral prednisone (60mg/d), furosemide (80mg/d), enalapril (40mg/d), atorvastatin (20mg/d), Espironolactone-A (100mg/d), ranitidine 300 (mg/d) and low-sodium diet. The proteinuria (200mg/24h) and ARF (creatinine 1 mg/l), resolved rapidly.

Although, the pathogenic mechanisms proposed for MCD are not exactly known, some evidences suggest a T cells dysfunction with the production of a permeability factor. Moreover, it has been suggested a



**Figure 1.** (A) Dilated renal proximal tubule-like distalization (\*) and disappearance of the brush border (arrowhead). Note the normal optical appearance glomerular segment present in the figure (PAS x 400). (B) Electron micrograph of part of a glomerulus which has extensive fusion pedicel (arrowheads) and podocyte cytoplasm vesicularization (\*) (x 2479).

possible “cross-talk” between dendritic cells and Th lymphocytes with a consequent intrarenal cytokine production.<sup>3</sup> In addition, both the modulation of the actin cytoskeleton at the glomerular diaphragm filtration level that induce by B7-1 expression,<sup>4</sup> and the destabilization of the synaptopodin protein<sup>5</sup> would be others probable causes of visceral epithelial injury.

On the other hand, it is unclear because patients with MCD may be more sensitive to develop ARF, compared to other nephrotic glomerulopathies. The mechanism underlying to this clinical-pathological entity has not been fully clarified. Several mechanisms attempt to explain the ARF in the nephrotic syndrome. The extensive interstitial edema observed in the present case, could lead to an increased intrarenal pressure and consequently explains the sharp drop in GFR observed in our patient. This finding is supported by one of the stronger hypothesis that explains this situation: nefrosarca hypothesis.<sup>6</sup> Nevertheless, the hypothesis that

links the ARF of nephrotic syndrome with changes in the coefficient of ultrafiltration should be considered.<sup>7</sup> Finally, Chen et al. have hypothesized that cytokines secreted induce the production of endothelin-1, which generate contraction of mesangial cells resulting in a decrease of the filtration area.<sup>8</sup>

In summary, in the present case the immune response after influenza vaccination generated the podocitopathy known as minimal change disease possibly due to hypersensitivity syndrome. In this clinical-pathological context the patient developed acute renal failure which pathogenic bases are still controversial and debated in the biomedical area.

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### Conflict of interest

The authors declare that there is no conflict of interest associated with this manuscript.

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## Lanthanum carbonate and peritoneal catheter dysfunction

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### To the Editor,

Clinicians are frequently faced with relatively banal issues that become factors of diagnostic confusion or can even trigger more severe complications.

In patients treated with peritoneal dialysis, constipation can become a very difficult problem, and can even reach the point of completely impeding the drainage function of the peritoneal catheter.<sup>1</sup> This is the result of displacement of the catheter towards the upper abdomen and the fact that, even with a properly positioned catheter, a rigid intestine hinders the

recovery of infused peritoneal fluid. Over 50% of catheter dysfunctions are related to constipation, and at times this necessitates intensive laxative treatment.<sup>2</sup> Constipation is also an issue in the development of hernias and complications from pressure on the abdominal wall, and can even facilitate the passage of bacteria from the intestinal lumen, leading to peritonitis.<sup>3</sup>

Constipation can be associated with several different factors, such as a certain degree of intestinal paresis, insufficient mobility, and a diet low in fibre, which is often the result of diets that restrict the intake of fruits, and frequently is a result of the medications administered for concomitant problems. Several treatments administered to dialysis patients can generate or aggravate this situation, such as the resins used for hypercalcaemia and phosphate binders. Lanthanum carbonate is a phosphate binder, without calcium or aluminium, which is effective in controlling hyperphosphataemia, and being a radiopaque compound, results in very characteristic radiological images.<sup>4</sup> However, as is the case in other chelating agents, it can produce constipation that is difficult to treat using conventional measures.<sup>5</sup> A peritoneography can aid in the diagnosis of this type of mechanical issue.

We present the case of a patient in which the administration of lanthanum carbonate produced severe constipation and displacement of the catheter to the point where peritoneal dialysis treatment became impossible.

Ours was a 47 year-old patient with chronic renal failure from interstitial nephropathy secondary to reflux, who had been on haemodialysis since 1990. He underwent his first kidney transplant in 1991, which was then removed due to chronic dysfunction, and underwent a second transplant in 1999, which was again lost to the same reasons. He returned to haemodialysis in 2010. Due to in-

tolerance to the second kidney, the patient underwent graft embolisation. He was receiving lanthanum carbonate at 750mg/8 hours due to secondary hyperparathyroidism and hyperphosphataemia. Due to several failed vascular accesses, it was suggested that the patient be transferred to peritoneal dialysis, and a straight, double-cuff Tenckhoff catheter was implanted. During training, we detected catheter malfunction with incomplete drainage, so we performed abdominal x-rays (Figure 1) and peritoneography (Figure 2). In addition to the remnants of the radio-opaque material from the graft embolisation, we observed a large quantity of faecal matter throughout the large intestine, with radiolucent images indicating the presence of lanthanum carbonate. The peritoneal catheter was poorly positioned towards the hepatic flexure of the colon, and the peritoneography dye was completely restricted between the transverse colon and the lower edge of the liver, which was clearly outlined, without disseminating into the rest of the abdominal cavity. Suspension of the lanthanum and intensive laxative treatment progressively resolved the constipation and dye restriction, although it did



**Figure 1.** Simple abdominal x-ray Remnants of graft embolisation. Poorly positioned catheter and severe constipation caused by lanthanum carbonate use in radiolucent images.