PALPABLE PURPURA, GET YOUR MIND OUT OF VASCULITIS: ACUTE RENAL FAILURE DUE TO ENDOCARDITIS IN A PATIENT AFFECTED WITH AUTOSOMAL POLYCYSTIC KIDNEY DISEASE

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Introduction
Patients with infective endocarditis (IE) can develop several forms of renal disease: a bacterial infection-related immune complex-mediated glomerulonephritis (GN), renal infarction from septic emboli (1-3), and renal cortical necrosis. In addition, a drug- induced acute interstitial nephritis or, with aminoglycosides, acute kidney injury (due to acute tubular necrosis) can develop as a result of treating the infection.
Case Report
In November 2018, a 72 year-old man was referred to our hospital with a history of autosomal dominant polycystic kidney disease and an impaired renal function with creatinine level of 1,7 mg/dL and an estimated glomerular filtration rate of 40 mL/min; he was affected with enphysema, esophageal hiatal hernia undergone surgery. He ate a semi liquid diet due to a recent bleeding peptic ulcer and to an intestinal subocclusion with spontaneous resolution.
At first observation he appeared asthenic and malnourished. He had no dyspnea, no fever or other symptoms; His hemodynamic parameters were normal. At the inspection we detected a palpable purpura on the lower extremities, without edema.
Biochemical analysis showed a raise of creatinine to 3,7 mg/dL compared to the follow-up, with an estimated glomerular filtration rate of 15 mL/min, hemoglobin concentration 8 g/dL, white blood cells 7.600/mm3, C reactive protein 4 mg/dL.
At admission to the hospital we found ruematic factor 185 UI/mL, low levels of C3 and C4, elevated serum immunoglobuline G level, P and C ANCA absent, negative cryoglobulin test, ANA positive (1:160). The urine sediment was characterized by red blood cell, mild proteinuria (< 0,380 g/day), and sterile pyuria. During the first days his creatinine level increased up to 6 mg/dL, with preserved diuresis. His history of polycystic kidney disease and his age did not allow the performance of renal biopsy and so we were going to start an immunosuppressive therapy with steroid and cyclophosphamyde. Before starting these drugs we decided to do an echocardiogram, that revealed a severe regurgitation of the mitral valve with a large pedunculated mass on it. Transesophageal echocardiogram confirmed the vegetation of 2,6 cm. We performed blood cultures and we started a treatement with daptomycin and heparin;
The colture were positive for Staphylococcus hominis spp hominis. After one week of therapy we observed disappearance of purpura and an initial recovery of the renal function; after two weeks the patient was underwent a surgical mitral valve replacement and, despite his frail general conditions and his comorbidity after two months his renal function went back to 2 mg/dL.

Discussion
Infective endocarditis (IE) is a serious disease with a high associated mortality rate, particularly when complicated by acute renal failure (ARF) (4).
Despite improvements in diagnostic methods and antimicrobial agents, the incidence of infective endocarditis (IE) remains high in specific populations of individuals, such as hemodialysis patients and drug abusers.
The most common organism in IE-associated GN is S. aureus (5), which is seen in 56 % of cases; Streptococcus species are the next most common. One-half of affected patients do not have a known risk factor; in the remainder, common comorbidities included cardiac valve disease (30 %), intravenous

drug use (29 %), hepatitis C (20 %), and diabetes (18 %). Acute kidney injury is the most common clinical presentation, and almost all patients have hematuria. Features of the acute nephritic syndrome were seen in a minority, as was nephrotic syndrome; 53 % of patients had reduced C3 complement, and 19 % had reductions in C4 complement, suggesting activation of the alternative complement pathway. ANCA (usually directed at myeloperoxidase or lactoferrin) may be positive in up to one-third of patients; some patients also have a positive rheumatoid factor, and rare patients are positive for anti- GBM autoantibodies (6-7) . In the largest series, crescentic GN was the most common pattern seen on renal biopsy specimens by light microscopy (53 %). Diffuse proliferative GN was also a common finding (33 %), and focal proliferative GN and mild mesangial proliferative GN were seen in a few patients. In addition to GN, the majority of patients showed tubular injury and interstitial inflammation. By immunofluorescence microscopy, C3 was present in 94 percent of cases, immunoglobulin staining was observed in less than one-third of biopsies, and IgA-dominant (or codominant with IgG) staining was seen in 17 %. A significant proportion of biopsies met the criteria for pauci-immune GN by immunofluorescence. On electron microscopy, 90 percent of biopsies showed deposits, most commonly in the mesangial area, followed by the subendothelial area. Only a minority had subepithelial "humps", which are deposits that are classically seen in infection-related GN.

Conclusion

Infective endocarditis is a serious disease with a high mortality even with optimal treatment and care. A number of complicating conditions are known to be of importance for the outcome. Only few data are available in IE patients on the indipendent prognostic value of kidney function at the time of admittance.

Although valve surgery and treatment with antibiotic agents are recommended, surgical options and the optimal therapy are not as yet well documented.

The prognosis of IE has been shown to be strongly influenced by the complication of congestive heart failure, neurologic events, systemic embolism and prolonged fever (10). Glomerulonephritis secondary to endocarditis, is a rare diagnosis usually associated with blood culture-positive bacteria, particularly staphylococci and streptococci (3). In some cases, IE induces rapidly progressive glomerulonephritis and results in end-stage renal failure, which is associated with poor patient prognosis (11). Apart from antibiotic therapy, effective strategies include surgery, steroid therapy, immunosuppressive therapy and dialysis (12). However, the appropriate therapy for IE associated with renal injury has not been adequately defined.

There is a universal consensus among clinical physicians concerning the treatment of these types of symptoms using antimicrobial therapy (9,11), yet there has been no definitive agreement on the use of other treatments such as surgery and steroid therapy (8,9). Furthermore, plasmapheresis treatment is also recommended and is thought to possibly relieve immune-mediated pathogenesis.

Some case reports have shown that immunosuppressive therapies such as cyclophosphamide and steroid therapy (low-dose) with antibiotics improve renal dysfunction of IE-induced crescentic glomerulonephritis (12). At the same time, there were no relevant reports in the literature clarifying the side effects associated with steroid therapy in this condition.

In this case report, in spite of the lack of a biopsy, the meticulous study of the patient has allowed us to achieve diagnosis and to choose the appropriate therapy, making the difference for his life.

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