DIFFUSE PODOCYTOPATHY COMPATIBLE WITH COLLAPSING GLOMERULOPATHY POST COVID-19 VACCINE

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INTRODUCTION

- Collapsing glomerulopathy (CG) considered as an aggressive and distinct histological variant of focal segmental glomerulosclerosis (FSGS) has aroused great interest recently
- Involve rapid loss of renal function, high incidence of nephrotic syndrome, poor response to therapy and an early need for renal replacement therapy in about 50% of the cases
- Common risk factors: patients with Apolipoprotein L1 (APOL1) gene mutation, patients with HIV and SARS-CoV-2 infection.

CASE PRESENTATION

BACKGROUND

A 51 year old male previously healthy received his first Pfizer boost for COVID-19 on July 13th 2021. No adverse reactions were reported. 21 days later he received his second Pfizer boost.

- Few hours later after vaccination: headache, malaise, and shivering
- 2 weeks later: bipalpebral edema and edema in lower limbs were added
- At emergency room: BP 180/120 An ABPM was performed and hypertension of recent diagnosis was confirmed. Laboratory tests showed normal result. Patient started antihypertensive drugs.
- 3 months later the patient continued with edema and foamy urine was added. Significant proteinuria in 24 hours (386.7 mg/24h) was reported. The patient started Furosemide
- 2 renal ultrasounds scans were performed with no alterations reported
- Laboratory test showed an altered lipid profile, a slight increase in serum creatinine (from 0.89 to 1.04), proteinuria in 24 hours continued altered (1478.8 mg/24h) and subclinical hypothyroidism was diagnosed
- 7 months later a nephrotic proteinuria (12799.2 mg/24h) was reported for the first time
- 9 months later additional tests were requested (VDRL, HBsAg, Anti-HBs, ANA, pANCA, cANCA, Anti-PLA2R, HIV ELISA). All results were negative
- 1 year later: Renal biopsy was taken. Histopathological findings were compatible with Collapsing glomerulopathy (CG).
- During the entire period of illness, the patient denied having respiratory symptoms. 2 more serologic tests were requested, Anti-N-SARS-CoV-2 was found negative yet Anti-S-SARS-CoV-2 resulted positive
- The patient lost a total of 18 kg in 1 year.

DISCUSSION

- No specific etiology for CG has yet been established.
- APOL1 gene mutation, patients with HIV and SARS-CoV-2 infections are the closest relations we have to causality
- Glomerulopathies have been reported after receiving COVID-19 vaccines, however none of them has presented as a CG.
- The following case is the first reported with this histological pattern after receiving an RNA COVID-19 vaccine
- 2 serologic tests helped defined that the patient had not got infected by COVID-19 but he had developed antibodies because of vaccination.
- Anti-N-SARS-CoV-2 (-), Anti-S-SARS-CoV-2 (+)
- Pathogenesis of emerging cases of CG associated with COVID-19 infection have been established as multifactorial proposing on the one hand direct toxic viral effect on podocytes and on the other, injury in podocytes caused by virus induced cytokine release syndrome

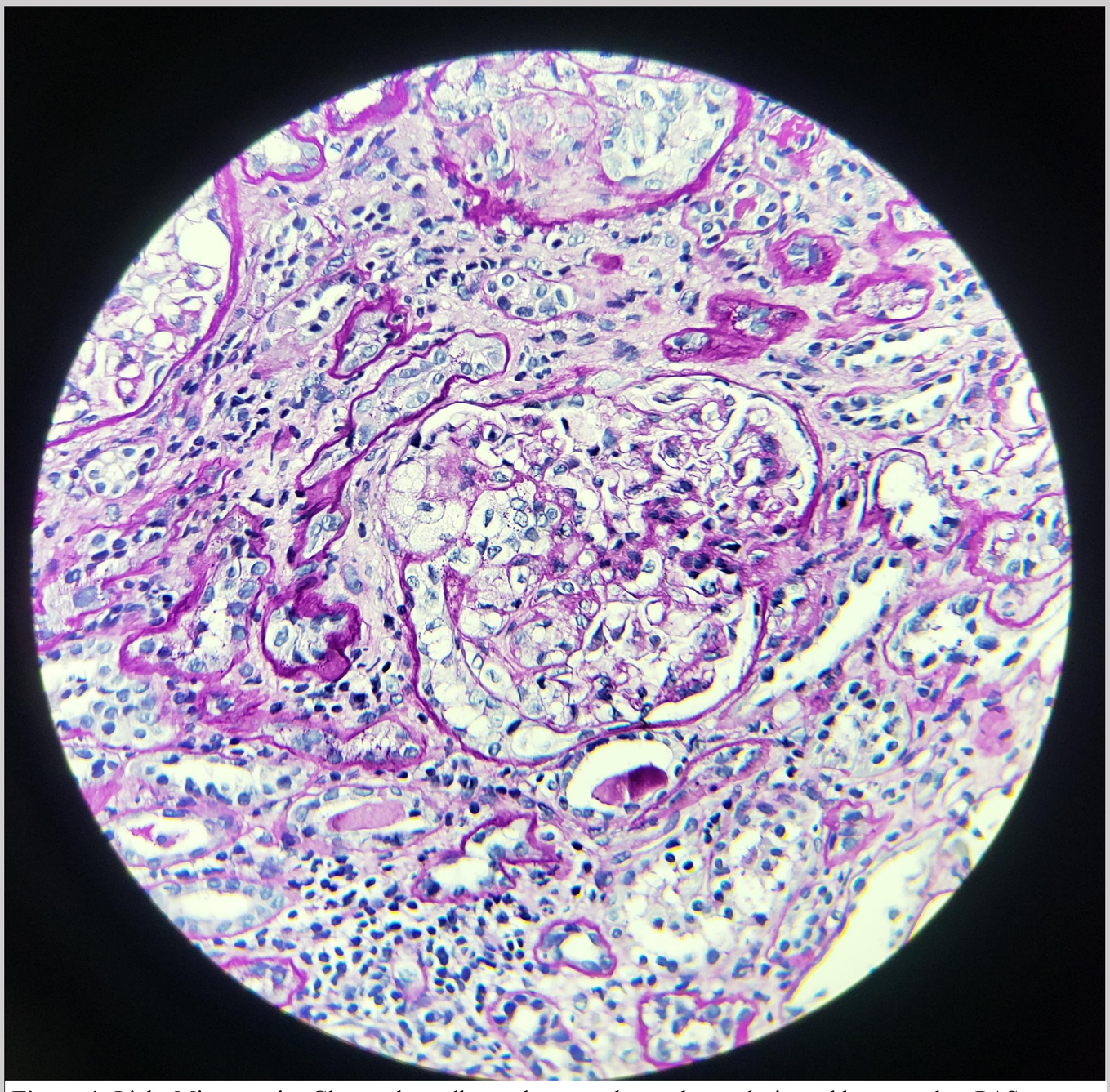

Figure 1: Light Microscopic: Glomerular collapse due to podocyte hyperplasia and hypertrophy. PAS staining 40X

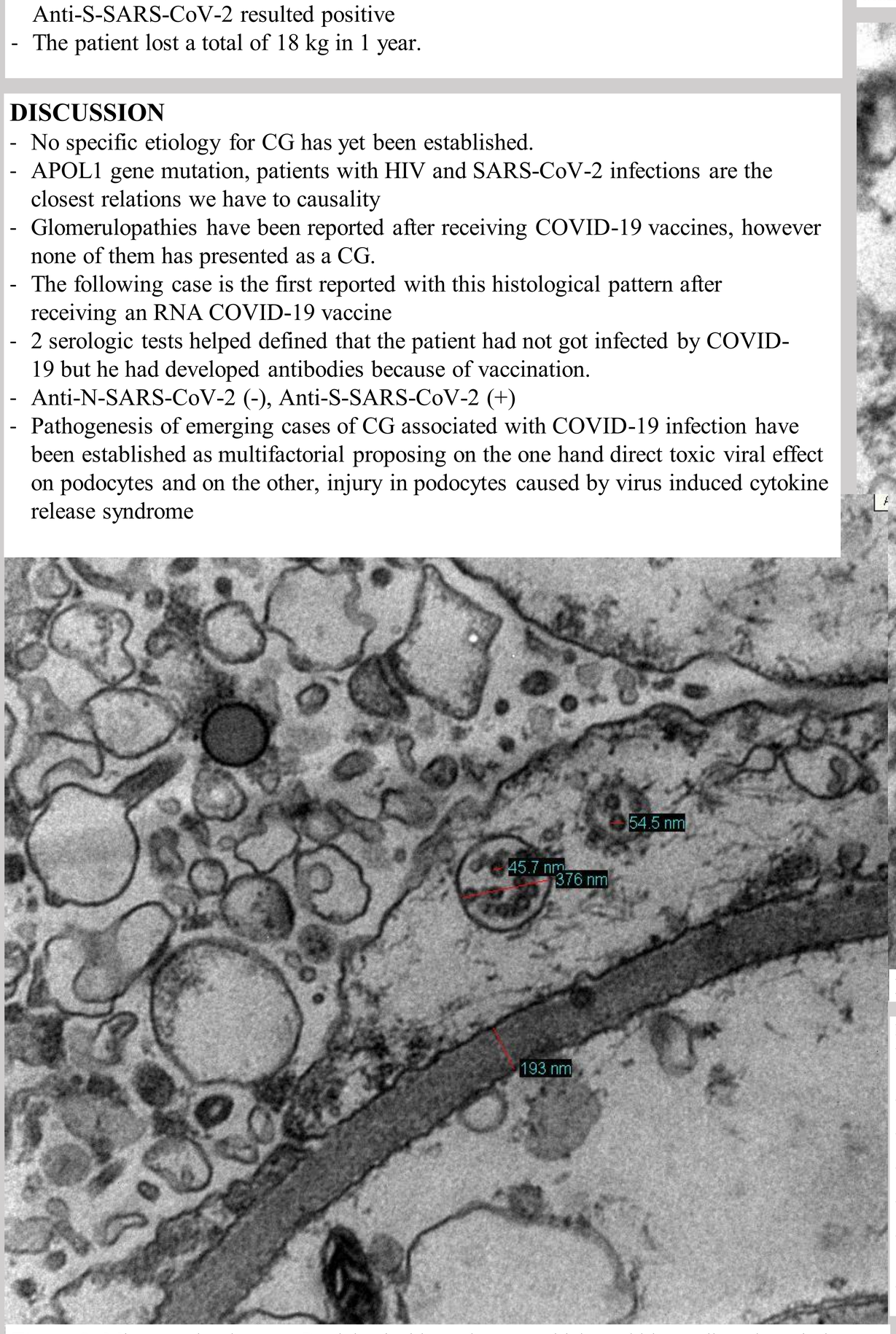

Figure 2: Microscopic electron: Particles inside podocytes which could be attributed to viral particles

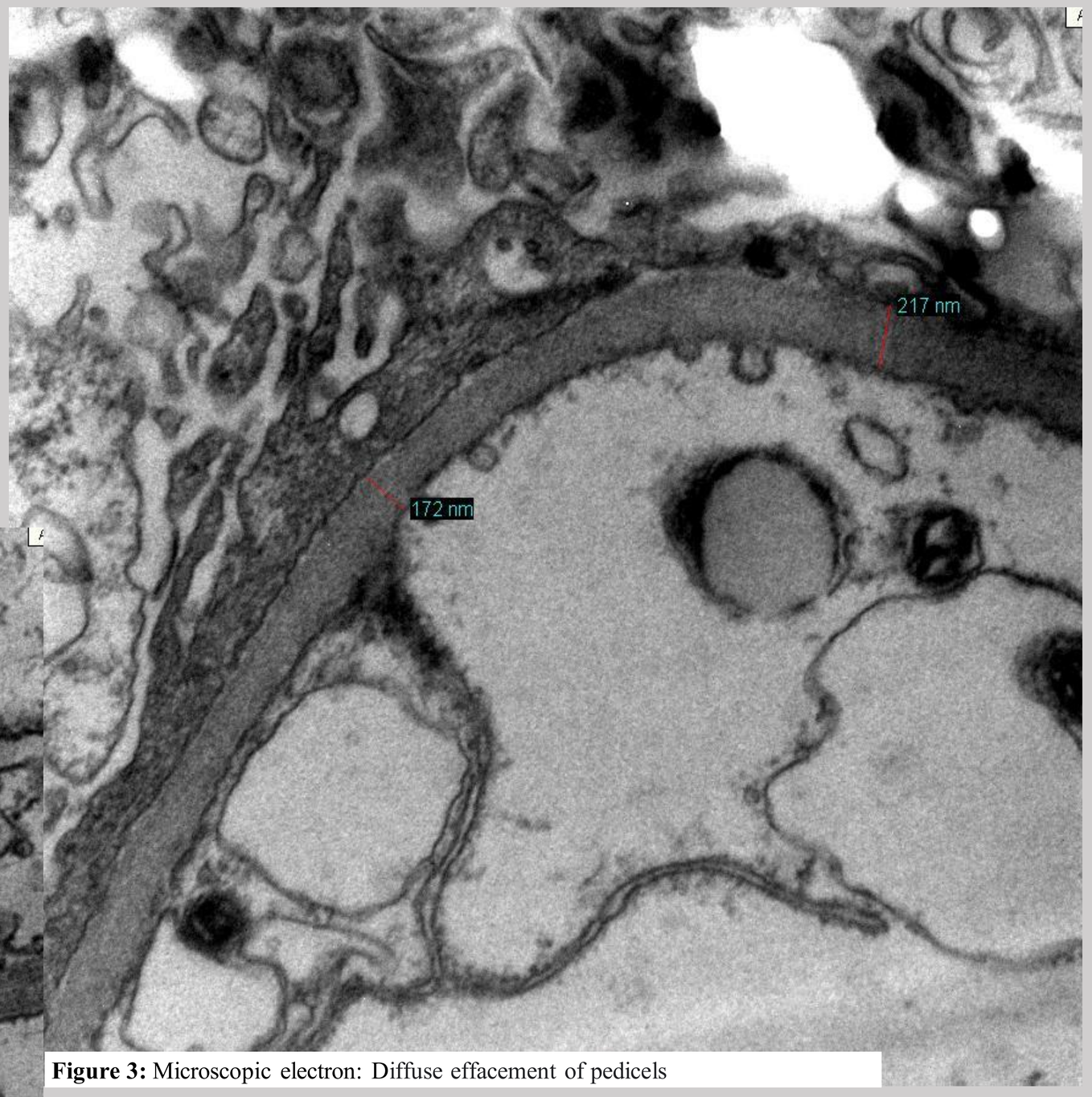

Figure 3: Microscopic electron: Diffuse effacement of pedicels

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