Table S1: Literature review of presumed levamisole adultered cocaine associated membranous nephropathy

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| Publication | Demographics | Systemic manifestations | ANCA  serology | Renal manifestations | Renal biopsy | Toxicology  screen | Levamisole  exposure | Membranous  nephropathy  work-up | Induction  immunosuppresion | Maintenance  immunosuppression | Follow-up | Mechanism |
| Mouinuddin  et al.(1) | 50 year old female with asthma, hypertension, rheumatoid arthritis | purpuric, violaceous, non-blanching, retiform rash, ulcers, necrosis | P-ANCA positive, anti-MPO 134 AU/ml | dysmorphic RBC, proteinuria 1600mg/24 hours, Cr 194.5µmol/L | crescentic vasculitis, MN  IF for PLA2R antigen and IHC for IgG4, MPO staining negative | cocaine  opiates | NR/NP | colonoscopy, mammogram, pap smear, CXR, RPR, serum anti-PLA2R antibody, IgG4, HBV, HCV, NSAID, ANA, anti-dsDNA negative | MP then prednisone, oral CYC 2mg/kg/day | AZA | Cr 70.7µmol/L  PCR 113mg/g  MPO 17.3 AU/mL | NET  haptens  subepithelial antigen deposition (MPO, levamisole) |
| Carrara et al. (2) | 34 year old female with alcohol, cocaine abuse, HCV clearance | ulcers, anemia, thrombocytopenia | P-ANCA positive, anti-MPO 311.4 U | dysmorphic RBC, PCR 2.4mg/g, Cr 4.2mg/dL, hemodialysis | necrotizing and crescentic GN, MN  IF for PLA2R antigen negative | cocaine  barbituates | NR/NP | ANA (weak), dsDNA HBV, HCV negative | MP then prednisone, rituximab, plasmapheresis | N/A | recovery from hemodialysis, Cr 1.6mg/dL  lost to follow-up | GBM injury by membranous immune deposits  autoantibodies |
| Roca-  Argente  et. al (3) | 49 year old Caucasian male with HCV | skin necrosis, hemolytic anemia, thrombocytopenia, MRSA bacteremia | P-ANCA positive 1:1280, anti-MPO 56.4 U/mL, anti-PR3 47.10 U/mL | dysmorphic RBC, RBC casts, proteinuria 1.35g/24 hours, Cr 7.09mg/dL, hemodialysis | MN with cellular crescents | NR/NP but parental cocaine 3-4 days before | NR/NP | N/A | MP then prednisone | prednisone | recovery from hemodialysis, Cr 1.98mg/dL, eGFR 20-30ml/min, proteinuria less than  1g/24 hours | deposition of exogenous antigen (levamisole)  direct endothelial damage |

Note: P-ANCA = perinuclear anti-neutrophilic cytoplasmic antibody, MPO = myeloperoxidase, RBC = red blood cell, Cr = creatinine, PCR = protein to creatinine ratio, MN = membranous nephropathy, IF = immunofluorescence, IHC = immunohistochemistry, PLA2R = phospholipase A2 receptor, GN = glomerulonephritis, CXR = chest x-ray, RPR = rapid plasma regain, HBV = viral hepatitis b, HCV = viral hepatitis C, NSAID = non-steroidal anti-inflammatory drug, ANA = anti-nuclear antibody, dsDNA = double stranded DNA, MP = methylprednisoline, CYC = cyclophosphamide, AZA = azathioprine, NET = neutrophil extracellular traps, MRSA = methicillin resistant staphylococcus aureus, PR3 = proteinase 3, eGFR = estimated glomerular filtration rate, NR/NP = not reported/not performed

1. Moinuddin I, Madhrira M, Bracamonte E, Thajudeen B, Sussman A. Membranous nephropathy with crescents associated with levamisole-induced MPO-ANCA vasculitis. Pathol Res Pract. 2016 Jul;212(7):650-3.

2. Carrara C, Emili S, Lin M, Alpers CE. Necrotizing and crescentic glomerulonephritis with membranous nephropathy in a patient exposed to levamisole-adulterated cocaine. Clin Kidney J. 2016 Apr;9(2):234-8.

3. Roca-Argente L, Moll-Guillen JL, Espi-Reig J, Blanes-Julia M, Garcia-Martinez AM, Pujol-Marco C, Hernandez-Jaras J. Membranous glomerulonephritis and cellular crescents induced by levamisole-adulterated cocaine abuse: A case report. Ann Transl Med. 2015 Oct;3(18):271,5839.2015.10.29.