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Ahmad Alshomrani
University of Nebraska Medical Center

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Abstract

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#72. Extranodal Follicular Dendritic Cell Sarcoma: Clinicopathologic and Immunohistochemical Profile of a Rare Sarcoma

Ahmad Alshomrani[1], Nila Jones[1], Esther M. Habib[1], Ab Rauf Shah[1], Safina Hafeez[1], Joseph D. Khoury[1], Dinesh Pradhan[1]

[1]Department of Pathology, Microbiology & Immunology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

Mentor: Dinesh Pradhan

Program: Pathology

Type: Original Research

Background: Follicular Dendritic Cell Sarcoma (FDCS) is a rare malignant neoplasm characterized by spindled-to-ovoid cells exhibiting morphological and immunophenotypic features of follicular dendritic cells. FDCS can occur in both nodal and extranodal sites.

Methods: We identified nine cases of FDCS from pathology archives over a period of 30 years. From these nine cases, we did a comprehensive evaluation, including histology, immunostains, imaging, and clinical data.

Results: We identified 9 FDCS cases, including 3 male and 6 female patients (M:F ratio of 1:2). Median age was 67 years (range: 40-89). All patients were of Caucasian ethnicity. The tumors presented in diverse locations: neck soft tissue (2 cases), perigastric area (1 case), mediastinum (2 cases), gluteal area (1 case), liver (1 case), thigh mass (1 case), and pancreas (1 case). Immunohistochemical analysis consistently demonstrated CD21 and CD23 positivity in all cases, with clustering in 6 cases. Epstein-Barr virus-encoded small RNA (EBER) in situ hybridization studies were performed on 3 cases and were negative. No cases exhibited immunoreactivity for keratin markers or S100. Remarkably, one case presented as a pancreatic mass, prompting a Whipple procedure. Castleman disease was absent. Six cases (67%) developed distant metastasis to various sites, including the pleura (2 cases), prehepatic tissue, peritoneum, ileum (1 case), liver (2 cases), and mediastinum.

Conclusion: These nine FDCS cases highlight the clinical and pathological diversity of this exceedingly rare malignancy. FDCS occurring in atypical anatomical sites, such as the pancreas, accentuates diagnostic complexities. Furthermore, the absence of Castleman disease underscores the need for meticulous differentiation.

#73. Autoimmune Hemolytic Anemia in the Setting of Hemophagocytic Lymphohistiocytosis (HLH)

Jonathan Nilles[1], Clayton Oakley[2], Omar Abughanimeh[2]

[1]Department of Internal Medicine, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[2]Department of Internal Medicine, Division of Oncology & Hematology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

Mentor: Omar Abughanimeh

Program: Internal Medicine

Type: Case Report

Background: Hemophagocytic lymphohistiocytosis (HLH) is a syndrome of excessive immune activation leading to tissue destruction. HLH usually presents as a febrile illness with multiple organ involvement and lab abnormalities. Anemia is especially common. The mechanism of cytopenias in HLH is predominantly attributed to the suppression of hematopoiesis by pro-inflammatory cytokines and consumption by hemophagocytosis. This case report demonstrates an additional cause of anemia in the setting of HLH.

Case: A 40-year-old male presented to the hospital with falls and acute confusion. The patient also had whole body pruritis, fatigue, and nausea/emesis. Initial labs showed significant elevation in liver function tests (LFTs) and total bilirubin. INR was also elevated. The patient was admitted for acute liver failure. Further evaluation of the acute liver failure noted elevated ferritin, LDH, and triglycerides. Abdominal ultrasound showed hepatomegaly and splenomegaly. Despite being afebrile, the patient had a high probability of HLH. Bone marrow biopsy noted hemophagocytosis. Soluble CD25 was elevated. The diagnosis of HLH was confirmed with 6 of 9 diagnostic criteria. HLH was attributed to EBV viremia. During workup for acute liver failure, the patient was noted to have worsening anemia (hemoglobin of 4.4 g/dL). Haptoglobin was low. Peripheral smear noted spherocytes. Direct antiglobulin test was positive for both Anti-IgG and Anti-C3. The patient was also diagnosed with autoimmune hemolytic anemia (AIHA).

Conclusion: Anemia in the setting of HLH is potentially multifactorial. There is minimal data to date noting AIHA in the setting of HLH. This case report supports the assertion that other conditions may develop in association with HLH.

#74. MALDI-TOF Mass Spectrometry Used in Diagnosis of Nocardiosis in a Patient With a Renal Transplant

Nathaniel Leonardi[1], Clifford Miles[1]

[1]Department of Internal Medicine, Division of Nephrology, College of Medicine, University of Nebraska Medical Center, Omaha, NE

Mentor: Clifford Miles

Program: Internal Medicine - Nephrology

Type: Case Report

Background: Nocardiosis, an opportunistic infection, occurs most often in immunocompromised patients. Nocardia, a Gram + Filamentous actinomycete, is slow growing, historically taking 3-5 days to diagnose in the laboratory. Diagnosis has been hastened with matrix-assisted laser desorption/ionization-time of flight mass spectrometry (MALDI-TOF). We present a case of a renal transplant patient with a loculated nocardial pleural effusion, confirmed via MALDI-TOF.

Case: Patient is a 63-year-old male with a past medical history of a kidney transplant, secondary to granulomatosis with polyangiitis, who presented to the hospital for hypoxia. CT revealed a moderate right sided pleural effusion. Initial management included thoracentesis and initiation of broad spectrum anti-microbial coverage with vancomycin and cefepime. His respiratory status remained compromised despite these interventions. Biopsy yielded Acid-Fast branching gram-positive rods after 4 days. MALDI-TOF confirmed the diagnosis of Nocardia Farcinica. Direct Treatment with Bactrim and Moxifloxacin was started, and Mycophenolate was held. He underwent Video-Assisted Thoracoscopic Surgery for adhesion clearance, leading to symptomatic

improvement and hospital discharge.

Conclusion: This is a case of MALDI-TOF assisted diagnosis of Nocardia in a loculated pleural effusion. We present this case to bring awareness for MALDI-TOF aided diagnosis. MALDI-TOF is used in diagnosis of a wide array of slow glowing bacteria, yeast, mold, non-fermenting bacteria, and mycobacterium. With slow growing bacteria, MALDI-TOF can be used to increase the speed in diagnosis and treatment. This is particularly useful in immunosuppressed patients with a history of organ transplants as a delay in treatment could have worse outcomes.

#75. Lenvatinib-Induced Cryoglobulinemic Glomerulonephritis: It is Never Too Late

Divya Sood[1,5], Whitney Goldner[2,5], Kirk Foster[3,5], Apar Kishor Ganti[4,5], Ketki Tendulkar[1,5]

[1]Department of Internal Medicine, Division of Nephrology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[2]Department of Internal Medicine, Division of Rheumatology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[3]Department of Pathology, Microbiology & Immunology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[4]Department of Internal Medicine, Division of Hematology & Oncology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[5]VA NWI Health Care System, Omaha, NE

Mentor: Ketki Tendulkar

Program: Internal Medicine - Nephrology

Type: Case Report

Background: Lenvatinib is a multikinase inhibitor used to treat thyroid cancer and hepatocellular carcinoma. Hypertension and proteinuria (including nephrotic range proteinuria) are known side effects. Proteinuria is due to vascular endothelial growth factor inhibition causing glomerular membrane disruption. Kidney biopsy often shows focal segmental glomerulosclerosis or thrombotic microangiopathy. This is the first case of cryoglobulinemic membranoproliferative glomerulonephritis with Lenvatinib, seen 6 years after initiation.

Case: A 67-year-old woman with metastatic thyroid cancer developed acute nephrotic syndrome on Lenvatinib therapy. She has a history of breast cancer (2011) status post mastectomy and chemotherapy; acute myeloid leukemia (2014) status post hematopoietic cell transplant; thyroid cancer (2013) status post thyroidectomy, radioiodine, and subsequent radiation in 2013, 2016 and 2021. She was started on Lenvatinib in 2016 with disease stabilization. Hypertension was controlled on lisinopril and amlodipine.

In 2022, she developed pedal edema, uncontrolled hypertension, and AKI.

Serum creatinine increased from 0.7 mg/dL to 1.1 mg/dL, and albumin was 2.6 gm/dL. Urinalysis showed moderate blood and protein with Urine Protein/Creatinine - 7.9. Lenvatinib was stopped. Complement levels were normal. ANA (1:160) and serum cryoglobulins were positive. Kidney biopsy showed membranoproliferative glomerulonephritis; immunofluorescence favored cryoglobulinemia and acute tubular injury. Bone marrow biopsy was negative for recurrence of AML. Infectious disease evaluation was negative. Six weeks after stopping Lenvatinib, albumin improved to 3.5 g/dl and hematuria and proteinuria resolved.

Conclusion: Lenvatinib can cause nephrotic syndrome even at lower doses and after prolonged treatment. Multidisciplinary management is essential to ensure optimal care of malignancy and side effects of treatment.

#77. When Rare Things Return: A Case of Late, Indolent, Post Transplant Recurrent Collagenofibrotic Glomerulopathy

Divya Sood[1], Kirk Foster[2], Scott Westphal[1]

[1]Department of Internal Medicine, Division of Nephrology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[2]Department of Pathology, Microbiology & Immunology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

Mentor: Scott Westphal

Program: Internal Medicine - Nephrology

Type: Case Report

Background: Collagenofibrotic glomerulopathy (CG), also known as Collagen Type III glomerulopathy, is an extremely rare disorder caused by abnormal glomerular deposition of type III collagen. Etiology and prognosis are poorly understood, and its implication in kidney transplantation is unclear.

Case: A 44-year-old female with a history of diabetes mellitus developed kidney dysfunction and nephrotic range proteinuria. A biopsy revealed mesangial expansion and nodularity suggestive of diabetic glomerulopathy, however, electron microscopy revealed extensive subendothelial deposition of type III collagen fibrils, consistent with CG. She progressed to ESKD and received a living donor kidney transplant.

She experienced a straightforward transplant course with excellent graft function for more than a decade. 12 years post-transplant, she developed sub-nephrotic range proteinuria (UPCR 1.0) with otherwise stable graft function (serum creatinine 1.2 mg/dl). The biopsy revealed features of recurrent CG with notable curved, banded subendothelial aggregates (**Figure 1**).

Diagnosis of recurrent collagenofibrotic glomerulopathy was made and supported by tandem mass spectrometry, which confirmed composition of the aggregates as type III collagen.

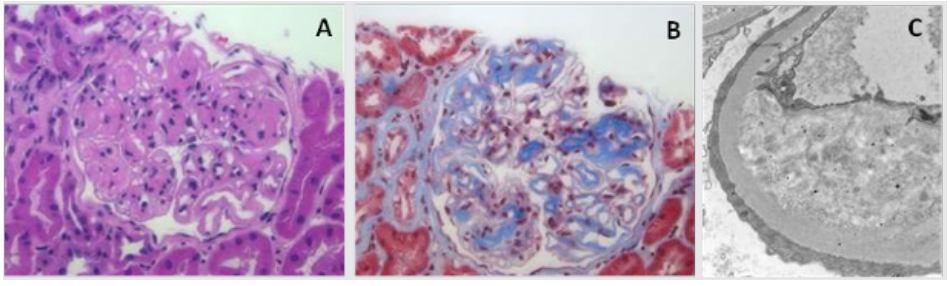

Figure 1. H&E stain **(A)**, Trichrome stain **(B)** and Electron microscopy **(C).**

Conclusion: CG is a rare disorder characterized by abnormal glomerular deposition of type III collagen. Its cause and pathogenesis are unclear and lack definitive treatment. There is a paucity of cases describing recurrence post-transplant and its implication on long term graft outcomes is unknown. Here, we describe a case of late recurrent CG, presenting with sub-nephrotic proteinuria and stable allograft function.

#78.Schisto-What? A Classic Case of Nephrotic Syndrome With an Unclassic Pathogen

Kyle J. Scholten[1], Akshay Kashyap[2], Kevin Brittan[1], Brandon Miller[1]

[1]Department of Internal Medicine, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA
[2]College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

Mentor: Brandon Miller

Program: Internal Medicine

Type: Case Report

Background: Schistosomiasis is a common disease in the developing world that affects over 200 million people, with the highest prevalence in sub-Saharan Africa. It is uncommon in the United States (US), as the parasite is not endemic to the area. We present a classic case of nephrotic syndrome with an unlikely culprit.

Case: A 50-year-old Somali woman with a history of congestive heart failure, type 2 diabetes, and recently diagnosed schizophrenia presented with dyspnea, orthopnea, peripheral edema, and lower extremity pain that began three days prior. Chest x-ray highlighted large bilateral pleural effusions. Vitals were pertinent for a blood pressure of 208/76 mmHg and oxygen saturation of 83%. Creatinine was 1.41, glucose was 240, high sensitivity troponin was 23, congestive heart failure peptide was 2330, and albumin/creatinine ratio was 3895. CT chest showed splenic infarction.

Workup for the cause of nephrotic range proteinuria was negative. Transthoracic echocardiography showed a pulmonary arterial systolic pressure of 75 mmHg. Schistosomiasis IgG resulted positive. Hospital stay was complicated by increasing paranoia of the patient. A renal biopsy, lumbar puncture, and brain MRI – due to concern for neuroschistosomiasis given psychiatric symptoms - were recommended by infectious disease. Given complicated psychosocial factors, the testing was not performed. Ultimately, infectious disease recommended the patient be treated with prednisone 80 mg daily for one week, followed by praziquantel 40 mg/kg orally for three days with steroid taper for one month empirically.

Conclusion: Although uncommon in the US, schistosomiasis should be considered in patients with a travel or immigration history from endemic areas with nephrotic syndrome.

#79. Cost-Effectiveness Modeling of the Use of Chlorhexidine Gluconate Irrigation Solution to Prevent Postoperative Infection in Inflatable Penile Prosthesis

Sean McDermott[1], Matthew Schefcik[1], **Alan Quach**[1], Christopher Deibert[1]

Department of Surgery, Division of Urology, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

Mentor: Christopher Deibert

Program: Urologic Surgery

Type: Original Research

Background: Inflatable penile prosthesis (IPP) is an excellent surgical option for men with refractory erectile dysfunction. Though uncommon, the potential for infection remains and can lead to surgical revision or explant. To prevent this, intra-operative irrigants to flush each corpus cavernosum are employed. However, even with these products, IPP placement poses a 0.5%-3% infection risk. One such irrigant, Irrisept, (chlorhexadine gluconate CHG) has recently been introduced into the field of urology for IPP surgery. This investigation aimed to define the range of IPP infection rates at which Irrisept CHG could serve as a cost-effective approach.

Methods: By utilizing the Markov Model (constructed using TreeAgePro 2022) using established data from literature to define the incremental cost of complications following IPP placement, we aim to use this to identify the range of infection rates at which CHG could serve as a cost-effective alternative. The probability of infection using Irrisept CHG was investigated during sensitivity analysis at a range of 0.25% to 6%.

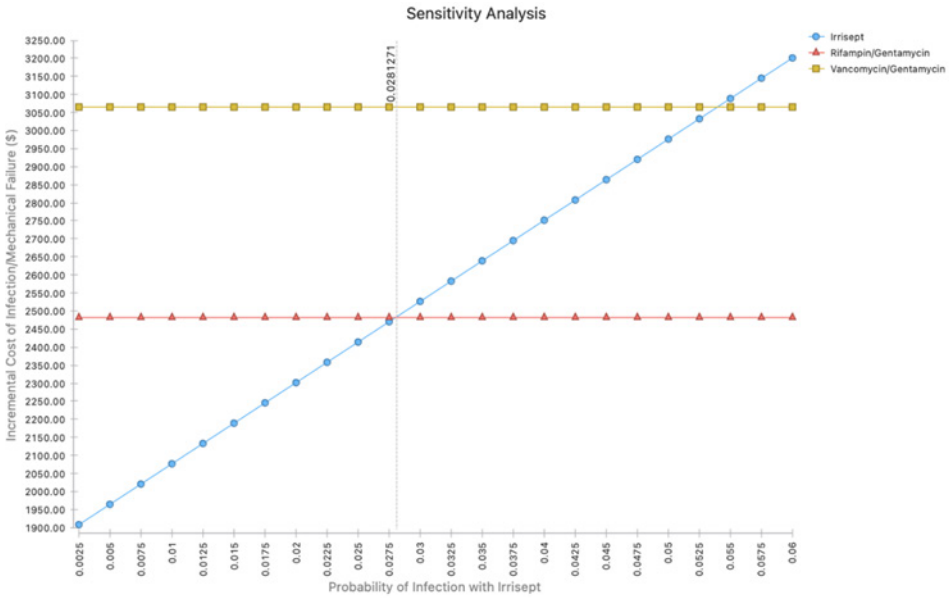

Figure 1. Sensitivity analysis of incremental cost of unsuccessful surgery when using CHG compared to Rifampin/Gentamicin and Vancomycin/Gentamicin.

Results: In our model, we found the incremental cost of infection/mechanical failure to be several thousand dollars when utilizing standard antibiotic regimens of Rifampin/Gentamicin ($2483) and Vancomycin/Gentamicin ($3066). However, if CHG irrigation ($65/operation) is utilized instead,