Grand Rounds

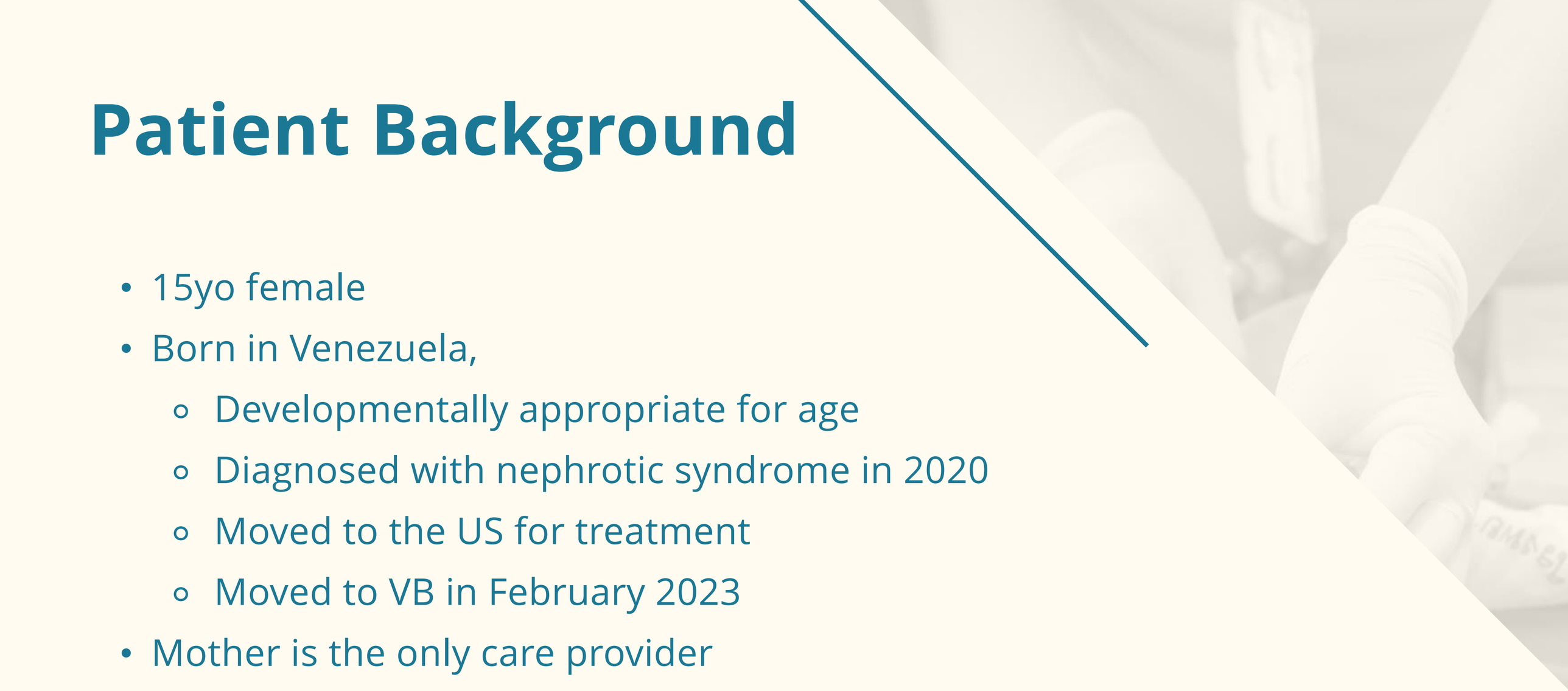
Nephrotic Syndrome

By: Justin J. Park

Objectives

- Analyze LN’s nephrotic syndrome history and treatment
- Explore the pathophysiology and treatment of nephrotic syndrome
- Foster culturally competent care for LN and her family
- Evaluate LN's assessment data to identify nursing priorities
- Implement comprehensive care strategies for LN
- Develop tailored education and discharge plans for LN
- Apply relevant research to enhance LN’s care

Patient Background



- 15yo female
- Born in Venezuela,
  - Developmentally appropriate for age
  - Diagnosed with nephrotic syndrome in 2020
  - Moved to the US for treatment
  - Moved to VB in February 2023
- Mother is the only care provider
  - No other family within the US

Cultural Considerations

- Primary language for patient and her mother is Spanish
- Mother does not speak English
- Patient only speaks basic English
- Medical interpreter used for interactions
- No specific cultural beliefs were identified

Hospitilization

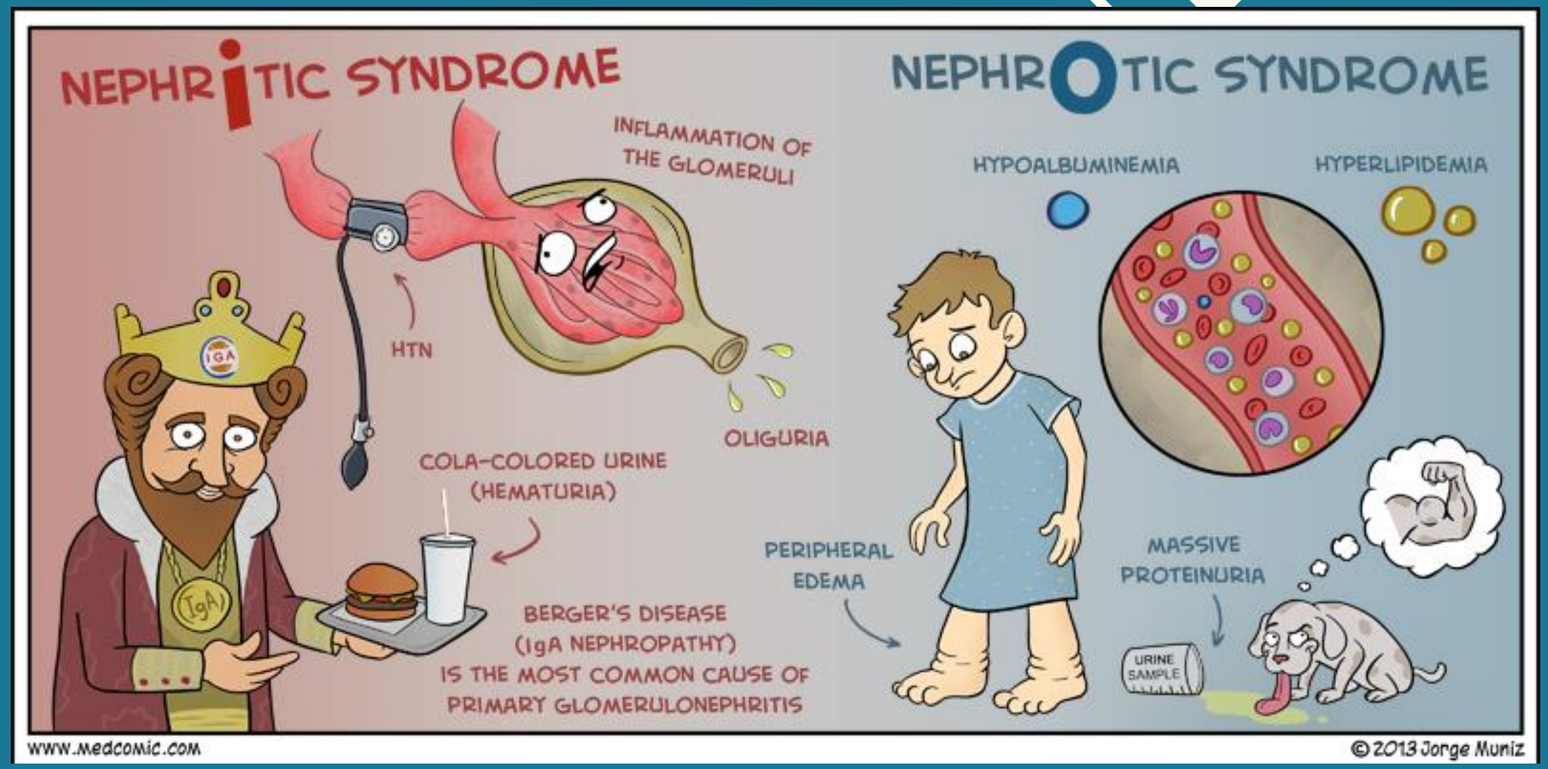
- Patient was receiving treatment at a local kidney center when she began experiencing pain in her lower right abdomen.
- She was referred to CHKD ED to rule out appendicitis
- Appendix was not visible on ultrasound. Patient was admitted and scheduled for a CT.
- Labs revealed that she was experiencing proteinuria and hypoalbuminemia
- Blood cultures were positive for gram+ cocci

Nephrotic Syndrome?

- Damage to the glomerular filtration barrier leads to protein loss
- Decreased albumin reduces osmotic pressure causing fluid to leak into interstitial tissue
  - Also causes a loss of
    - Ig antibodies
    - antithrombin III
- Liver compensates by increasing protein synthesis including lipoproteins

Presentation

- Edema
  - Facial followed by body
  - Ascites or pleural effusion
- Hypoalbuminemia < 3g/dL
  - Normal 3.5 - 4.5
- Proteinuria > 3g/day
- Hyperlipidemia



Patient Assessment

HEENT: Facial edema w/ extensive swelling in periorbital area

Respiratory: Course crackles in lower lobes

GU: Frothy urine

GI: Pain in LRQ 7/10; NPO; abdominal distention

Integumentary: +2 edema bilaterally in lower legs, ankles, hands and forearms

Labs & Tests

- Albumin = 1.7+
- Protein > 300mg/dL
- Blood culture positive for gram +cocci
- CT to rule out appendicitis

Nursing Problems

- Excess Fluid Volume
- Infection
- Acute Pain

Expected Outcomes

- Reduction in fluid volume
- Eliminate infection
- Pain control

Plan of Care

- Administer antibiotics for infection
- Reduce edema
  - albumin to increase osmotic pressure
  - furosemide to remove excess fluid
- Administer pain medication for pain control
- Monitor I&O
- Nutrition education
- Consideration of ACE inhibitors/ARBs and lipid-lowering agents

Excess Fluid Volume

- Course crackles in the lungs
- Facial edema and lower limb edema
- Abdominal distention and tenderness indicates possible ascites
- Monitor I&O
- Daily weights
- Albumin
- Furosemide

Pain

- Abominal distension and tenderness rated 7/10
- Ascites
- Acetaminophen
- Fentanyl

Infection

- Blood culture positive for gram+ cocci
- Nephrotic syndrome leads to loss of Ig antibodies
- Patient will be started on corticosteroids
- q4h vitals
- Ceftriaxone
- Metronidazole

Signs & Symptoms

- Edema
- Hypoalbumenia < 3g/dL
- Proteinurea
- Foamy urine

Medical Dx:
Nephrotic Syndrome

Nursing Problems

- Excess fluid volume
- Risk for infection
- Pain
- Impaired gas exchange

Complications

- Infection
- Hyperlipidemia
- VTEs
- AKI/CKD
- HTN

Treatment

- Albumin infusions
- Diuretics
- Lipid lowering agents
- ARBs/ACE inhibitors

Evidence Based Practice Related to Increased VTE Risk

- 221 out of 6866 (3%)of nephrotic syndrome patients developed VTE during admission
- Associations with VTE:
  - Female
  - Lupus nephritis
  - BMI>30
  - AKI
  - Sepsis
  - IV corticosteroids

References

Kanna Shinkawa, Yoshida, S., Seki, T., Motoko Yanagita, & Kawakami, K. (2020). Risk factors for venous thromboembolism in patients with nephrotic syndrome: a retrospective cohort study. Nephrology Dialysis Transplantation, 36(7), 1199–1206. https://doi.org/10.1093/ndt/gfaa134

Evidence Based Practice To Reduce VTE Risk

- Compression therapy has been found to be exceptionally useful and well tolerated in nephrotic syndrome patients.
- Use of compression devices has been associated with improved hemostasis and reduced edema
- Use:
  - Compression stockings
  - Sequential compression devices

References

Sutkowska, E., Fulek, M., Fulek, K., Fortuna, P., & Madziarska, K. (2023). Nephrotic syndrome – different risk of venous thromboembolism with different approaches to justify prophylactic anticoagulation. Angiology, 74(6). https://journals-sagepub-com.proxy.lib.odu.edu/doi/full/10.1177/00033197221126248

Discharge Planning & Education

- Schedule nephrology followup
- Nutrition referral
  - protein intake of 1/g/kg/day
  - low sodium diet
- Observe for periorbital swelling or excessively foamy urine
- Avoid NSAIDS
- Reducing risk for infection
  - avoid crowds and sick people
  - wash hands

Summary

- Nephrotic syndrome leads to hypoalbuminemia
  - results in edema, Ig antibody loss, antithrombin III loss
- Primary treatment is related to controlling symptoms and complications
- An albumin infusion is typically needed for diuretics to work
- For the patient, we focused on reducing her edema, treating her sepsis, and controlling her pain.
- Long-term treatment includes dietary changes, oral steroids, ACE inhibitors/ARBs, and lipid-lowering agents.