Treatment & Management of Chylothorax: Practical Applications for TPN Patients

Presented by: Matthew Russell, PharmD

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Objectives

- Define chylothorax and potential causes of the condition
- Understand specific nutritional needs and measures used for chylothorax
- Identify the role of NPO and TPN therapy for chylothorax
- Explain the utility of MCT oil in chylothorax and factors to consider for TPN therapy
- Describe tube feed options for chylothorax and how to monitor for improvement

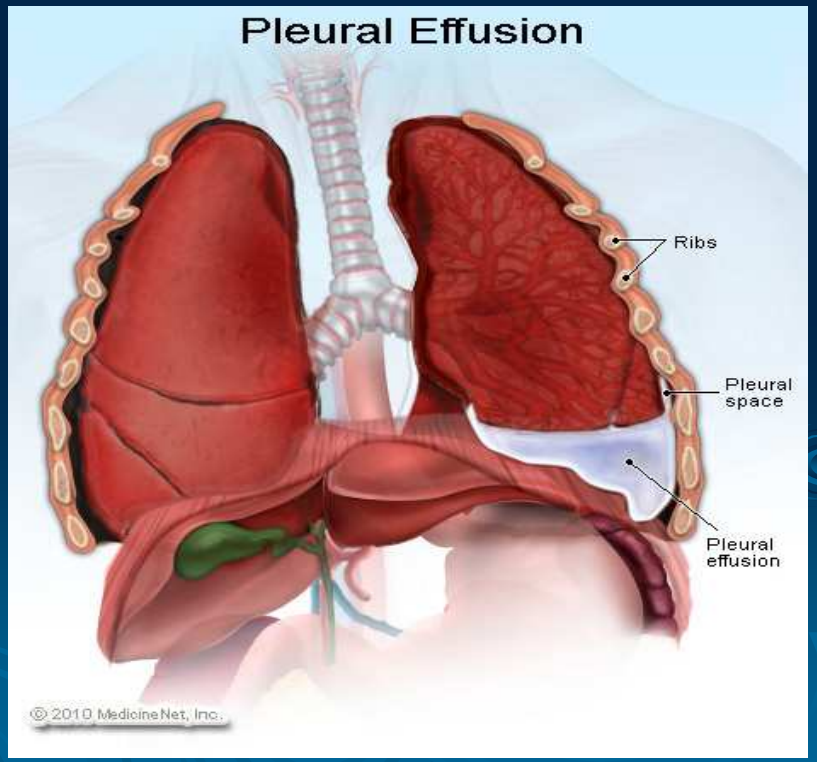
Chylothorax- What Is It?

- Chyle:
  - Contains fat, protein, electrolytes, lymphocytes, & other materials
  - Derived from GI tract
  - Transported through lymphatic vessels
- Chyle leak can occur in form of:
  - Chylothorax
  - Chyloperitoneum
  - Chylopericardium

www.acvs.org

Chylothorax- Causes

- Primary:
  - Congenital lymphangiectasia
- Secondary:
  - Post-op complication
  - Malignancies
  - Penetrating trauma
  - Cirrhosis
  - LAM



http://www.onhealth.com/pleural_effusion/article.htm

Chylothorax- Diagnosis

- If chyle leak suspected:
  - Drainage should be analyzed
- TG level >110 mg/dl = chyle leak
  - Visual confirmation unreliable
- TG level 50 – 110 mg/dl
  - Lipoprotein analysis required
- TG level < 50mg/dl
  - Likely not chyle leak

Chylothorax- Manifestations

- Tissue damage
  - Compression of lung(s)
- Immunosuppression
  - Cell-mediated immunity
- **Nutritional Deficiencies**
  - Hypovolemia, metabolic acidosis, etc.

Chylothorax- Other Factors

- Complications can arise from increased volume & flow
  - Fat intake
  - Activity that increases blood flow
  - Peristalsis
  - Enteral intake

Chylothorax- Treatment

- Drainage = thoracentesis
- Octreotide
- Surgical repair
- **Nutritional support**

Chylothorax- Nutritional Management

- Goal: Reduce chyle output and flow, while restoring electrolyte & nutritional losses

- Options:
  - Low or no fat oral diet
  - Specialized enteral nutrition
  - Parenteral nutrition with NPO
  - Combination

Chylothorax- Baseline Factors

- Volume of drainage
- Serial x-rays
- Nutritional status
- Ultimate goal of therapy

www.fotosearch.com

Chylothorax- Oral Diet

- Used for patients who:
  - Can tolerate food by mouth
  - Have adequate nutritional status
- Fat-free diet = challenging
  - More meals & snacks
  - Fat-soluble vitamins
  - EFA supplements
  - MVI

Chylothorax- Oral Diet

- Medium chain triglycerides = MCT
  - Not transported via lymph*
  - Absorbed directly into portal vein
  - Available as oil or oral/enteral supplement
  - Provides 115 kcal/15mL
  - Dosed at 4-6 tablespoons over day
  - Expensive, not appetizing
  - > 3wks of tx = need EFA

Chylothorax- Enteral Nutrition

- Used for patients who can't:
  - Accept adequate food by mouth
  - Tolerate/comply with fat free diet
- Effective if chyle output < 1L/day
- Enteral formulas vary
  - Must verify formula provides full needs
- Can be expensive, but better than PN
  - Alternative: short term use of fat free oral supplement

Chylothorax- Parenteral Nutrition

- Used for patients who are:
  - Unresponsive to other therapies
  - Having increased chyle output on EN
- No definitive indication*
  - Chyle output >1L/day while NPO
- IV lipid emulsions are NOT contraindicated
  - Avoid travel through lymph system
  - Provide vital calorie source & EFA

Chylothorax- Parenteral Nutrition

- Essential fatty acids = EFA
  - Only obtainable from exogenous source
- Linoleic acid
  - Linolenic acid
  - Arachadonic acid
- Necessary for numerous functions
- Sources: IVLE & diprivan
- 2-4% of total calories = daily requirement

Chylothorax- Other Treatments

- Topical oils
  - Contain EFA
  - Data lacking
  - Low risk intervention
- Chyle reinfusion?!
  - On EN feeding with external chyle leak
  - Not surgical candidate
  - Reinfuse into enteral access port

Chylothorax- Monitoring

- Decrease in drainage volume
- Reduce size of pleural effusion
- Less frequent thoracentesis
- Nutritional status
  - Signs of deficiencies

Chylothorax- Conclusion

- No clear cut guidelines available yet
- Therapy very individualized
- Close monitoring necessary
- Loss of chyle = significant nutritional deficit
- TPN's **can** have lipids*

Patient Case

- 75 year old male presents for elective esophagogastrectomy for esophageal cancer. PMH significant for COPD, malnutrition, & persistent A.fib.
- Post surgery, pt develops large chyle effusion and is intubated. An order for TPN is placed.

Patient Case

- How much protein would you put in TPN? Would you put any lipids in it?
- Do you continue or D/C MCT oil while on TPN?
- TPN is D/C'd and pt is placed on TFs. Chyle output becomes >1L/day. TG level of drainage is 111mg/dl. What does this indicate & how would you treat?

Chylothorax- Questions

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References

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Mueller C, Kovacevich D, et al. The A.S.P.E.N. Adult Nutrition Support Core Curriculum, 2nd Edition. 2012.