

INFECTIOUS DIARRHEA

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Patient and Diagnosis

- Seth, 8 year old African American male
- Chief complaint:
 - Parents thought he had flu; has had diarrhea for 4 days and not gotten any better; seems weak and listless
- History:
 - Family spent last weekend at water park; Seth began running fever and having diarrhea second morning; has had very little to eat in last 24 hours; seems to be blood in diarrhea now; estimate 8-15 episodes in past 24 hours; brother and sister both had diarrhea but improved; not been seen by MD; taken Kaopectate and Pepto-Bismol
- Temperature: 102.3°F
- 24 hour recall: Parents estimate Seth has had less than 6 oz of Gatorade in past 24 hours and had to be strongly encouraged
- Diagnosis: Moderate dehydration R/O bacterial vs. gastroenteritis

Diagnostic Measures

- Stool culture
- Blood tests
- Urine analysis

Laboratory Results

	Normal	Admit	Day 2	Day 3
Sodium	136-145	148	144	138
Potassium	3.5-5.5	3.2	3.7	3.7
Osmolality	285-295	309	304	292
Total CO2	23-30	31	28	27
Creatinine	0.6-1.2	1.4	0.7	0.6

Urinalysis Results

	Normal	Admit	Day 2	Day 3
Color	Pale Yellow	Amber	Straw	Pale Yellow
Appear	Clear	Cloudy	Slightly Hazy	Clear
Sp. Gravity	1.003-1.030	1.039	1.020	1.008
pH	5-7	4.8	5.2	5.6
RBCs	0-5	1	0	0

What is diarrhea?

- Defined as an increase in frequency or bowel movements and/or an increase in water content of stools that affects either the consistency or the volume of fecal output

Different types of diarrhea

Osmotic Diarrhea

- Increase in osmotically active particles in the intestine
- The body reacts by pulling more water into the lumen
- Caused by maldigestion of nutrients, excessive sorbitol or fructose, enteral feeding and some laxatives
- When the causative agent is removed, the diarrhea will cease

Secretory Diarrhea

- Results from excessive fluid and electrolyte secretions into the intestine
- There is an underlying disease that causes these secretions
- It does not resolve when the patient is made NPO
- Bacterial infections often cause enterotoxins that cause this
- Other factors are medications, hormone-producing tumors, prostaglandins, and excessive amounts of bile acids or unabsorbed fatty acids in the colon

Consequences of Prolonged Diarrhea

- Large volume losses can quickly lead to dehydration and electrolyte and acid-base imbalances
- Hyponatremia and hypokalemia
- Chronic diarrhea can result in malnutrition and specific nutrient deficiencies
- By affecting appetite, it can affect and impair adequate ingestion
- It results in decreased transit time, which interferes with the ability of the GI tract to perform adequate digestion and absorption

Energy, Protein and Fluid requirements

- Energy needs are 60-75 kcal/kg/day.
 - $70\text{kcal} (24.5\text{kg}) = 1715$ kcal per day
- Protein needs are 1.5-2.5 g/kg/day
 - $2.0\text{g} (24.5\text{kg}) = 49\text{g}$ per day
- 1500 ml + 20 ml/kg above 20 kg/d
 - $20(4.5) = 90$
 - $1500 + 90 = 1590\text{ml}$ per day

Treatment- Medical, Surgical and/or Psychological

- Plan:
 - ▣ D5W ½ normal saline with 40 mEq KCl/L 20 mL per kg/hr for 3 hours. Increase to 100 mL/kg over next 7 hours; then decrease to 100 mL/hr
 - ▣ Fecal smear for RBC and leukocytes. Stool Culture

D5W 1/2 NS with 40 mEq KCl @ 100 mL/hr

- D5W is a 5% dextrose solution in water
- NS stands for normal saline
- This will provide 77 mEq of sodium in every liter and in 24 hours he will receive 1848 mEq
- In 1 hour Seth will receive 5g of dextrose and in 24 hours he will receive 120g of dextrose
- This will provide 40 mEq of potassium in every liter and will receive 960 mEq of potassium in 24 hours.

Treatment- Medical Nutrition Therapy

- Start patient on Pedialyte at 30 cc per hour as tolerated.
- Once lab values are balanced start patient on a soft, bland, low residue diet
 - BRAT
 - Low residue

BRAT diet

- The BRAT diet is a diet that is used when a patient has nausea, vomiting, or diarrhea from a virus or other stomach ailment.
- BRAT stands for Bananas, Rice, Applesauce, and Toast.
 - ▣ These bland foods are easy to digest and may help with diarrhea and most people who have stomach illness can tolerate them pretty well.
- Other versions of the diet include BRATTY and BRATT

Low Residue

- A diet that is low in dietary fiber and is non-irritating to the digestive tract
 - Non caffeinated coffee and teas
 - Skim, 1% or 2% milk
 - Cottage cheese
 - Low fat ice cream
 - Tender well cooked meat, poultry and fish (chopped up)
 - Scrambled eggs
 - White bread
 - Refined cereals including puffed rice
 - Canned fruits and vegetables or cooked
 - White potatoes without skin
 - White rice
 - Sugar, salt, honey, jelly and seedless jam

PES statements

- Dehydration related to chronic diarrhea as evidenced by parents and patient admit.
- Weight loss related to infectious diarrhea as evidenced by food recall.

ADIME

- Assessment
 - 8 year old African American male; diarrhea for 5 days; REE= 1715kcal; Protein= 49g; Fluids= 1590mL
- Diagnosis
 - Secretory diarrhea caused by *E.Coli* 0157:H7
 - Dehydration related to chronic diarrhea as evidenced by parents and patient.
 - Weight loss related to infectious diarrhea as evidenced by food recall
- Intervention
 - D5W 1/2 normal saline with 40 mEq KCl/L 20 mL per kg/hr for 3 hours. Increase to 100 mL/kg over next 7 hours; then decrease to 100 mL/hr
 - Once imbalances are corrected, patient will be slowly switched to a solid food diet, via soft, bland foods
- Modification/Evaluation
 - Check lab values every day, also a urine sample. Make sure patient and knows the signs of dehydration and how to treat. Make sure patient understands bland, soft, low residue diet.

References

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