Failure to Thrive (as it relates to neglect)

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OBJECTIVES

• What is Failure to Thrive?
• What is the Etiology regarding FTT?
• How is FTT recognized?
• Why does FTT matter?
• How do you differentiate between neglect as a cause vs. a medical etiology?
• How is FTT managed/treated?

WHAT IS FAILURE TO THRIVE

• FTT is a significantly prolonged cessation of appropriate weight gain compared with recognized norms for age and gender after having achieved a stable pattern.
• It is not a diagnosis, as it does not explain why a child is failing to grow or develop.
• Chronic FTT may lead to a slowdown in linear growth, resulting in low height for age.
ETIOLOGY

• The possible causes of FTT traditionally have been divided into two main categories:
  » Organic:
    » Attributed to malnutrition caused by major illnesses or organ system dysfunction
  » Nonorganic:
    » Attributed to environmental causes

ETIOLOGY

• It has since been discovered that FTT is often multifactorial.
• In 1977 George Engel presented the bio-psychosocial model as a way to understand diseases and illnesses
  – He advocated that physicians understand not only the biomedical facts of patient’s illnesses but also the psychological and social aspects.

ETIOLOGY

• When considering FTT, the bio-psychosocial model is critically important to use.
  • The biological, psychological, and social spheres all have the potential to greatly influence a child’s growth and development.
ETIOLOGY

• **THE BIOLOGICAL SPHERE**
  - The most obvious problems in the biological sphere contributing to growth failure are those related to major medical illness, either acute or chronic.

• **THE PSYCHOLOGICAL SPHERE**
  - Psychological factors in FTT usually center around the mental health issues of the caregivers, with the mother being the most often studied and evaluated.
    - Bonding
    - Relationship between caregiver and child
    - Child’s temperament

• **THE SOCIAL SPHERE**
  - In this sphere, poverty is the most pervasive risk factor in children evaluated for growth failure.

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ETIOLOGY

• It is recognized now that earlier distinctions between organic and nonorganic FTT are overly simplistic and not clinically appropriate.

• Example: An infant with an unrepaired congenital heart disease might fail to thrive not only because of the increased caloric requirement inherent in the disease but also because the caregivers are not compliant with medications, are unable to afford special formulas, or are inadequately bonded with their special needs child.
  - Simply treating the biomedical problem in the child will not satisfactorily resolve the growth issues.

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ETIOLOGY

• Three Basic Mechanisms are the underlying cause of FTT
  - Inadequate caloric intake
    - Incorrect preparation of formula
    - Excessive intake of formula such as excessive juice
    - Breast feeding problems
    - Inadequate intake of formula due to feeding problems, lack of milk, breast problems
    - Medical-Child Abuse
  - Inadequate Absorption and/or Excess Losses
    - Pyloric Stenosis
    - CNS disease
    - Celiac disease
    - Protein allergies
  - Increased Caloric Requirements
    - Cardiorespiratory disease
    - Infection such as HIV, TB, UTI
    - Defective utilization (body doesn’t process and/or store calories appropriately)
    - Insulin deficiency
    - Birth defects
    - Genetics

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ETIOLOGY

• THE FUNDAMENTAL CAUSE OF FAILURE TO THRIVE IS FROM NUTRITIONAL DEFICIENCY

ETIOLOGY

• More than 80% of children with poor growth do not have an underlying medical disorder. While there are those innocent factors that contribute to poor weight gain in some cases, neglect is directly responsible for the majority of children evaluated with FTT who do not have an underlying medical issue.

HOW IS FTT RECOGNIZED?

• Less than 24 months:
  - weight for age and or weight for length plotting less than 2nd percentile on the WHO growth chart AND not following growth curve
HOW IS FTT RECOGNIZED?

• Greater than 24 months:
  – Weight or length less than 5th percentile or BMI less than 5th percentile on CDC growth chart
  – Decreased growth velocity where weight falls more than TWO major percentiles and/or decrease of more than two standard deviations on the growth chart over a 3-6 month period.

What does FTT look like on a growth chart?

WHAT DOES FTT LOOK LIKE IN PICTURES?
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WHY DOES FTT MATTER?

• Adequate Nutrition is necessary for brain development.
  • The brain grows the most and fastest between the time of conception until around the 3rd year of life.
  • The brain synapses are formed based partly on use and need. If a child is not getting the nutrition they require, they are not developing the synapses to help with cognitive development.

WHY DOES FTT MATTER?

• A study by Corbett et al detected a significant association between the severity of growth deficiency and IQ.
• In a separate study, Raynor and Rudolf found that 55% of the infants who were failing to thrive exhibited developmental delay at follow-up, 5 years after their initial presentation.
WHY DOES FTT MATTER?

- A 20 year longitudinal study of 31 children with "non-organic" failure to thrive revealed that when there was a significant change in the quality of care given to the child, including creation of or movement into a more sensitive and positive emotional environment, the child as an adult experienced higher levels of self-esteem, higher educational attainment, increased levels of social support and more positive relationships and social skills.

FTT and Psychosocial Risk Factors

- While studies have proved that these children with FTT have demonstrated cognitive delay, it is not possible to attribute FTT as the only causal factor.
- A critical problem with many studies is that FTT is frequently confounded with psychosocial risk factors that have also been found to be independently related to Lower Mental Development index scores.

Psychosocial Risk Factors

- Young Parents
- Unplanned or unwanted pregnancy
- Lower levels of parental education
- Failure to complete high school
- Absence of a father
- Increased life stress
- Absence of a support network including family, friends, or other social supports
- Domestic Violence
- Mental Illness including postpartum depression and level of maternal anxiety
- Family dysfunction
- Parental history of childhood abuse
- Parental substance abuse
- Poverty
- Family history of criminality
- Parents with cognitive deficits
Evaluation of the child and family unit in the presence of FTT

• Dietary History:
  – Important to be as specific as possible
  – Amount of Food or formula
  – Formula preparation? Is it correct?

• Types of Food:
  – Beverage consumption specifically milk, juice, sodas, and water

• Feeding History:
  – When does the child eat? Where? With whom?
  – How is the child fed? Self? Spoon, other?
  – Feeding battles
  – Snack intake

• Birth History:
  – complications, small for gestational age, prematurity; birth weight

• Past Medical History:
  – Past hospitalizations, injuries, accidents
  – Recent acute illnesses: otitis media, gastroenteritis, recurrent viral infections

• Chronic Medical History:
  – Asthma, anemia, congenital heart disease

• Current Medical History:
  – Illnesses
  – Medications

• Developmental History

• Elimination/GI patterns

• Stool Pattern: frequency, consistency, blood, mucus

• Vomiting, reflux, or GI symptoms
Evaluation of the child and family unit in the presence of FTT

- **Family History**
  - Medical conditions or FTT in siblings
  - Family members with short stature
  - Differentiate between falling to expected height and true FTT
    - Dad’s height in cm + mom’s height in cm
    - Then add 13cm for boys or subtract 13cm for girls and divide by 2.
    - \[\frac{(\text{dad’s height in cm} + \text{mom’s height in cm})\pm 13}{2}\]

- **Social History**
  - Who lives in the home?
  - Who are the caregivers?
  - Mental health disease for family members especially caregivers?
  - Who helps support the family?
  - What is the child’s temperament?
  - Any important stressors, economic, intrafamilial, major life events?
  - Does anyone at the home have a problem with alcohol or drugs?
  - Other children in the home with neglect, FTT, CPS reports?

- **Parent History:**
  - Red Flags
    - Cannot report a feeding schedule (24 hour recall)
    - Irregular feeding patterns
    - In toddlers and school age children
      - Prolonged meal times
      - Unsupervised meals
      - Grazing
      - Excessive milk or juice
Evaluation of the child and family unit in the presence of FTT

- Observing the Infant/child
  - Red Flags: Physical
    - Unwashed/unclean/dirty fingernails
    - Diaper rash
    - Skin infections
    - Dirty clothing
    - Wrinkly clothing
    - Developmental Delay
  - Red Flags: Feeding
    - Nocturnal Feeding: feeding an infant/child while somnolent because the child refuses food while awake
    - Forced Feeding: forcefully feeding a child against his/her will. Forcing food into the child's mouth
    - Mechanistic: Feeding precisely at the same time every meal, ignoring hunger cues and or not interacting with the child during meals
    - Conditional Distraction: meals/feeds do not occur without distraction, such as television, toys
    - Prolonged mealtimes: long meals, often more than 30 minutes. Parent/caregiver continues with feeding even though child does not desire food and only consumes a minimal amount.
  - Red Flags: Social Interaction
    - No eye contact during feedings. No interaction with child during mealtime.
    - Bottle propping
    - Observation of feeding lacks pleasure on caregiver's part

CASE STUDY:
Growth Chart for patient seen this past spring in the hospital and in follow-up

CARE clinic
This patient was admitted directly to DCMC from his PCP's office due to concerns regarding his poor weight gain at 9 months of age. The pediatrician had reported that she had initially become concerned at this time. The patient was supposed to bring him in for a weight check at 7 months but failed to do so.

His mother was admitted to the hospital with another child. She brought the patient back at 9 months, then he gained 5 pounds in the first 2 days of his hospitalization. He was discharged home, then also started eating table foods 2 to 3 times per day and each has 3 ounces of Similac Advanced cooking 1 ounce per day with meals and bottle feedings at night and early evening.

CASE STUDY
JA demonstrated rapid weight gain of 220 grams (7oz) total over the first 2 days.

Of note: His mother was not present to prepare the meal and she was reported to be at home caring for her other children.
The CARE Team was consulted due to concerns that his failure to thrive was related to insufficient caloric intake due to lack of appropriate feeding.
Pertinent Past/current Medical History

• JA was full term and weighed 7 pounds and 12 ounces (3.515kg) at birth and was 19 ½ inches long.
• Weight: 63%
• Length: 43%
• Per his mother’s report he has been healthy since birth. He has not had any hospitalizations prior to this admission
• He is up to date on his immunizations
• He does not require any medications

Pertinent feeding history

• Mother reports same feeding history that was given at the pediatrician’s office.
• He takes 6 ounces 5 times per day of Similac Advanced.
– She pours 6 ounces of bottled water into the bottle first then adds 3 scoops of formula and shakes it before giving it to him
• He eats all the soft table foods that his family eats.
– i.e.: eggs, beans, sausage, biscuits, spaghetti, mashed potatoes
– He takes table foods during meal time with the family 3 times per day.

Pertinent Family History

• No history of medical conditions including FTT for family members including siblings.
• Mother denied any mental health disease.
• Family members are reported to be of average height.
Social History

- Single mother who is 22 years old
- Patient has a 5 year old half brother, a 3 year old half sister, and an 18 month old brother.
- CPS currently involved with the family for concerns of sexual abuse allegations made by 5 year old sibling regarding an uncle who resides in the home.
- Mother is unemployed
- Little extended family support
- Receives WIC and SNAP
- Mother has had history of arrests
- Reported past history of drug usage; denies current use

Review of Systems

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Developmental History at 9 months

- Rolling: “6 months”
- Sitting: “unable to sit on own”
- Crawling: “No”
- Smiles/Babbles: “Sometimes”
- Feeds self with fingers: “No”
- Holds Bottle/sippy cup on own: “No”
Physical Exam

- VITAL SIGNS: Stable.
- GENERAL: Small for age. Inadequate adipose tissue stores. Loose skin.
- HEAD: Mild Plagiocephaly
- EYES: Sclerae and conjunctivae clear without erythema or discharge. EARS: Normal shape and position with no lesions or deformities. EACs clear.
- NOSE: Nares patent with no drainage.
- MOUTH/THROAT: Atraumatic
- NECK: Supple, no JVD, no lymphadenopathy.
- HEART: Regular rate and rhythm with no murmur. Central and peripheral pulses palpable and symmetric.
- LUNGS: Clear to auscultation with no increased work of breathing.
- ABDOMEN: Soft nontender. No hepatosplenomegaly.
- GENITOURINARY: Tanner stage I.
- SKIN: No rashes. No bruises.
- EXTREMITIES: No swelling or abnormalities noted to 4 extremities. ROM x 4. NEUROLOGIC/PSYCH: Reflexes normal for age. PERRL/ Affect appears flat. Does not engage with caregiver

CASE STUDY

- Patient continued to display appropriate weight gain in the hospital over the next 24 hours when fed by nursing staff leading to the diagnosis of FTT related to insufficient caloric intake related to inadequate feeding.
- A CPS report was made due to the concern for neglect. After an initial investigation into the home environment was completed by the caseworker, it was determined that this patient should be placed out of the home with appropriate family members while his mother received services such as protective parenting and parenting classes.
CASE STUDY

• J.A. was monitored in the hospital for 3 days. Over the 3 days he gained 300 grams (10 oz). The only intervention provided in the hospital was the feeding regiment that he was reported to be on at home.
  – 5 six ounce feeds per day plus table foods 3 times per day.

CASE Study

• J.A. was discharged home with a maternal aunt and uncle.
• Prior to discharge they were taught how to prepare the formula correctly.
• WIC was set up by the CARE social worker and an appointment was scheduled for the following week.
• His aunt and uncle confirmed that JA had formula to support him until the WIC appointment the following week.

CASE Study

• J.A. was followed weekly in the CARE clinic for several weeks to monitor his weight.
• Notice the marked improvement in his weight gain once placed in a less chaotic environment where he is being fed appropriately.
CASE STUDY

- Developmental history 1 month later:
  - Rolling
  - Smiling, laughing
  - Words: mama, dada, baba
  - Sitting on own
  - Army crawling; attempting to get up on all 4s.

DETERMINING BETWEEN NEGLECT OR MEDICAL ETIOLOGY

- Again, FTT is often multifactorial and there is frequently overlapping between a medical cause as well as neglect or other psychosocial factors contributing to the FTT.
- It is very important to obtain a very detailed medical history.
- Invasive diagnostic studies are not always necessary and should not necessarily be part of the initial evaluation.

DETERMINING BETWEEN NEGLECT OR MEDICAL ETIOLOGY

- If JA had not demonstrated appropriate weight gain while being fed in the hospital setting by the nursing staff, it certainly would have been necessary to initiate a more complete diagnostic work up to include blood and urine tests as well as possible referrals to specialists such as GI and genetics.
WHAT TO DO IF YOU HAVE CONCERNS A CHILD MAY HAVE FTT

• REFER TO PCP

• REFER TO ER

• REFER TO CHILD PROTECTIVE SERVICES
  • 1-800-252-5400
  • It is important that you get accurate demographic information from the family/caregiver

Finally...

• Thank you for all of the support that you offer to the families who seek help from your service.
• Your service is vital for so many families to be successful!

REFERENCES

• Curtiss SS, Drewett RF, Wright CM. Does a fall down a centile chart matter? The growth and developmental sequelae of mild failure to thrive. Acta Paediatric. 1996;85:1279-1283
• Wright, C. M. "Identification and Management of Failure to Thrive: A Community Perspective." Archives of Disease in Childhood 82.1 (2000): 5-9.
CONTACT INFORMATION

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