JPAFP Journal Academy of Family Physicians Pakistan

Medical Guidelines

Diagnosis, Assessment and Management of Diarrhea and Vomiting In Children

Muhammad Tahir Chaudhary

Consultant Diabetologist, Family Care Medical & Diabetes Center, Allama Iqbal Town Lahore

Abstract

Objectives: Obesity is commonly associated with diabetes mellitus. It is one of the major risk factor that contributes to the onset of non insulin dependent diabetes mellitus in the local population. Our aim was to compare the levels of obesity related proteins that play role in the development of insulin resistance in the diabetic obese and non diabetic individuals.

Methods: For this purpose the study was carried out on 100 diabetic obese and 100 controls sex and age matched persons were recruited from sheikh zayed hospital, Lahore. Initially the body mass index of all the subjects was measured and diabetic subjects with the BMI greater than 30 were included in the study. Serum fasting glucose levels, microalbuminurea, fasting totalcholesterol, triglyceride, LDL, VLDL and HDL levels were measured for samples of all subjects by following the standard protocols.

Results: Total protein estimation was done by Bradford Assay. 10% SDS gel was performed for the protein analysis between control and obese diabetics. Blood glucose levels of all diabetic obese subjects were found to be greater than 126mg/dl. BMI values correlated positively with total cholesterol, LDL, and triglyceride levels. HDL levels were observed to be markedly decreased in diabetic subjects when compared to controls. Presence of obesity related proteins in diabetic subjects with BMI greater than 30 was confirmed.

Conclusion: In the next step we intend to estimate the level of obesity related proteins responsible for the diabetic subjects and compare them with the levels found in the controls.

Key Words: obesity, lipid profile, Pakistani, diabetes, BMI

How to cite this:

Tahir M. *Diagnosis, Assessment and Management of Diarrhea and Vomiting In Childrens.*J Acad Faml Phys Pak. 2017.10(1): 59-64.

Author: Dr. Muhammad Tahir **Email**: drtahirch@yahoo.com

Introduction

Infective gastroenteritis in young children is characterized by the sudden onset of diarrhoea, with or without vomiting. Most cases are due to an enteric virus, but some are caused by bacterial or protozoal infections. The illness usually resolves without treatment within days; however, symptoms are unpleasant and affect both the child and family or carers. Severe diarrhea can quickly cause dehydration, which may be life-threatening.

Gastroenteritis is very common, with many children having more than one episode a year. Parents and carers often manage their child's illness at home, and may not seek professional advice. However, many parents and carers do seek advice from healthcare professionals. Gastroenteritis is a significant burden on health service resource.

This guideline applies to children younger than 5 years who present to a healthcare professional for advice in any setting. It covers diagnosis, assessment of dehydration, fluid management, nutritional management and the role of antibiotics and other therapies.

Clinical diagnosis

- Suspect gastroenteritis if there is a sudden change in stool consistency to loose or watery stools, and/or a sudden onset of vomiting.
- If you suspect gastroenteritis, ask about:
    - Recent contact with someone with acute diarrhoea and/or vomiting and Exposure to a known source of enteric infection (possibly contaminated water or food)
- Be aware that in children with gastroenteritis:
    - Diarrhoea usually lasts for 5-7 days, and in most it stops within2 weeks.
    - Vomiting usually lasts for 1-2 days, and in most it stops within 3 days.
- Consider any of the following as possible indicators of diagnoses other than gastroenteritis
- Fever:
    - Temperature of 38°C or higher in children younger than 3 months Temperature of 39°C or higher in children aged 3 months or older shortness of breath or tachypnea Altered conscious state
    - Neck stiffness
    - Bulging fontanelle in infants
    - Non-blanching rash
    - Blood and/or mucus in stool
    - Bilious (green) vomit
    - Severe or localized abdominal pain
    - Abdominal distension or rebound tenderness

Laboratory investigations

Consider performing stool microbiological investigations if:

1. The diarrhoea has not improved by day 7
2. There is uncertainty about the diagnosis of gastroenteritis.

3. You suspect septicemia
4. There is blood and/or mucus in the stool or
5. The child is immunocompromised.

Assessing dehydration and shock

Clinical assessment

- Ask whether the child:
    - Appears unwell
    - Has altered responsiveness, for example is irritable or lethargic
    - Has decreased urine output
    - Has pale or mottled skin
    - Has cold extremities.
- Recognize that the following are at increased risk of dehydration:
    - Children younger than 1 year, particularly those younger than 6 months
    - Infants who were of low birth weight
    - Children who have passed more than five diarrhoeal stools in the previous 24 hours
    - Children who have vomited more than twice in the previous 24 hours
    - Children who have not been offered or have not been able to tolerate supplementary fluids before presentation
    - Infants who have stopped breastfeeding during the illness
    - Children with signs of malnutrition

Symptoms and signs of clinical dehydration and shock

Interpret symptoms and signs taking risk factors for dehydration into account. Within the category of 'clinical dehydration' there is a sp,ectrum of severity indicated by increasingly numerous and more pronounced symptoms and signs. For clinical shock, one or more of the symptoms and/or signs listed would be expected to be present. Dashes (-) indicate that these clinical features do not specifically indicate shock. Symptoms and signs with red flags (

	Increasing severity of dehydration →		
	No clinically detectable dehydration	**Clinical dehydration**	**Clinical shock**
Symptoms (remote and face-to-face assessments)	Appears well	⚑Appears to be unwell or deteriorating	–
	Alert and responsive	⚑Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Normal urine output	Decreased urine output	–
	Skin colour unchanged	Skin colour unchanged	Pale or mottled skin
	Warm extremities	Warm extremities	Cold extremities
Signs (face-to-face assessments)	Alert and responsive	⚑Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Skin colour unchanged	Skin colour unchanged	Pale or mottled skin
	Warm extremities	Warm extremities	Cold extremities
	Eyes not sunken	⚑Sunken eyes	–
	Moist mucous membranes (except after a drink)	Dry mucous membranes (except for 'mouth breather')	–
	Normal heart rate	⚑Tachycardia	Tachycardia
	Normal breathing pattern	⚑Tachypnoea	Tachypnoea
	Normal peripheral pulses	Normal peripheral pulses	Weak peripheral pulses
	Normal capillary refill time	Normal capillary refill time	Prolonged capillary refill time
	Normal skin turgor	⚑Reduced skin turgor	–
	Normal blood pressure	Normal blood pressure	Hypotension (decompensated shock)

- Suspect hypernatremia dehydration if there are any of the following:
    - Jittery movements
    - Increased muscle tone
    - Hyperreflexia

- Convulsions
- Drowsiness or coma.

Laboratory investigations

- Do not routinely perform blood biochemical testing.
- Measure plasma sodium, potassium, urea, creatinine and glucose concentrations if:
- Intravenous fluid therapy is required or
- There are symptoms and/or signs that suggest hypernatremia.
- Measure venous blood acid-base status and chloride concentration if the shock is suspected and confirmed.

Fluid management

Primary prevention of dehydration

In children with gastroenteritis but without clinical dehydration:

- Continue breastfeeding and other milk feeds
- Encourage fluid intake
- Discourage the drinking of fruit juices and carbonated drinks, especially in those increased risk of dehydration
- Offer ORS solution as supplemental fluid to those at increased risk of dehydration.

Treating dehydration

Use ORS solution to rehydrate children, including those with hypernatraemia, unless intravenous fluid therapy is indicated

- Give the ORS solution frequently and in small amounts
- Consider supplementation with their usual fluids (including milk feeds or water, but not fruit juices or carbonated drinks.
- Consider giving the ORS solution via a nasogastric tube if they are unable to or if they vomit persistently drink it
- Monitor the response to oral rehydration therapy by regular clinical assessment.

Intravenous fluid therapy

- Use intravenous fluid therapy for clinical dehydration if:
- Shock is suspected or confirmed
- A child shows clinical evidence of deterioration despite oral rehydration therapy
- A child persistently vomits the ORS solution, given orally or via a nasogastric tube.
- Treat suspected or confirmed shock with a rapid intravenous infusion of 20 ml/kg of 0.9% sodium chloride solution.
- If a child remains shocked after the first rapid intravenous infusion:
- Immediately give another rapid intravenous infusion of 20 ml/kg of 0.9% sodium chloride solution and Consider possible causes of shock other than dehydration.
- Consider consulting a pediatric intensive care specialist if a child remains shocked after the second rapid intravenous infusion.

- When symptoms and/or signs of shock resolve after rapid intravenous infusions, start rehydration with intravenous fluid therapy
- Measure plasma sodium, potassium, urea, creatinine and glucose at the outset, monitor regularly, and alter the fluid composition or rate of administration if necessary
- Consider providing intravenous potassium supplementation once the plasma potassium level is known.
- If intravenous fluid therapy is required in a child presenting with hypernatraemic dehydration: • Obtain urgent expert advice on fluid management
- Use an isotonic solution such as 0.9% sodium chloride, or 0.9% sodium chloride with 5% glucose for fluid deficit replacement and maintenance
- Replace the fluid deficit slowly-typically over 48 hours
- Monitor the plasma sodium frequently, aiming to reduce it at a rate of less than 0.5 mmol/l per hour. .
- Attempt early and gradual introduction of oral rehydration therapy during intravenous fluid therapy.

If tolerated, stop intravenous fluids and complete rehydration with oral rehydration therapy.

Fluid management after rehydration

- After rehydration:
- Encourage breastfeeding and other milk feeds
- Encourage fluid intake • In children at increased risk of dehydration recurring, consider giving 5 ml/kg of ORS solution after each large watery stool.
- Restart oral rehydration therapy if dehydration recurs after rehydration.

Nutritional management

- After rehydration:
- Give full-strength milk straight away
- . Reintroduce the child's usual solid food
- Avoid giving fruit juices and carbonated drinks until the diarrhea has stopped

Antibiotic therapy

- Do not routinely give antibiotics to children with gastroenteritis.
- Give antibiotic treatment to all children:
- With suspected or confirmed septicemia
- With extra-intestinal spread of bacterial infection
- Younger than 6 months with salmonella gastroenteritis • Who are malnourished or immunocompromised with salmonella gastroenteritis with Clostridium difficile-associated pseudomembranous enterocolitis, giardiasis, dysenteric shigellosis, dysenteric amoebiasis or cholera.

Other therapies

Do not use antidiarrhoeal medications.

Escalation of care

- Arrange emergency transfer to secondary care for children with symptoms suggesting shock
- Refer children for admission
- With symptoms suggesting an alternative serious diagnosis
- At high risk of dehydration
- Whose social circumstances make remote assessment unreliable.
- Provide a 'safety net' for children who do not require referral. The safety net should include information for parents and carers on how to:
- Recognize developing red flag symptoms
- Get immediate help from an appropriate healthcare professional if red flag symptoms develop.
- Arrangements for follow-up at a specified time and place, if necessary.

Preventing the primary spread of diarrhea and vomiting:

Advise parents, carers and children that:

- Washing hands with soap in warm running water and careful drying are the most important factors in preventing the spread of gastroenteritis
- Hands should be washed after going to the toilet or changing nappies and before preparing, serving or eating food
- Towels used by infected children should not be shared
- Children should not attend any school or other childcare facility while they have diarrhea or vomiting caused by gastroenteritis.
- **References:**

1) Cause and chronic-disease mortalities in Bangladesh (HEALS): a prospective cohort study." The Lancet **376**(9737): 252-258.

2) Hong, Y.-S., K.-H. Song, *et al.,* (2014). "Health effects of chronic arsenic exposure." Journal of preventive medicine and public health **47**(5): 245.
3) Kapaj, S., H. Peterson, *et al.,* (2006). "Human health effects from chronic arsenic poisoning–a review." Journal of Environmental Science and Health, Part A **41**(10): 2399-2428.
4) Khan, N. I., G. Owens, *et al.,* (2009). "Human arsenic exposure and risk assessment at the landscape level: a review." Environmental geochemistry and health **31**(1): 143.
5) Lindberg, A.-L., M. Rahman, *et al.,* (2008). "The risk of arsenic induced skin lesions in Bangladeshi men and women is affected by arsenic metabolism and the age at first exposure." Toxicology and applied pharmacology **230**(1): 9-16.