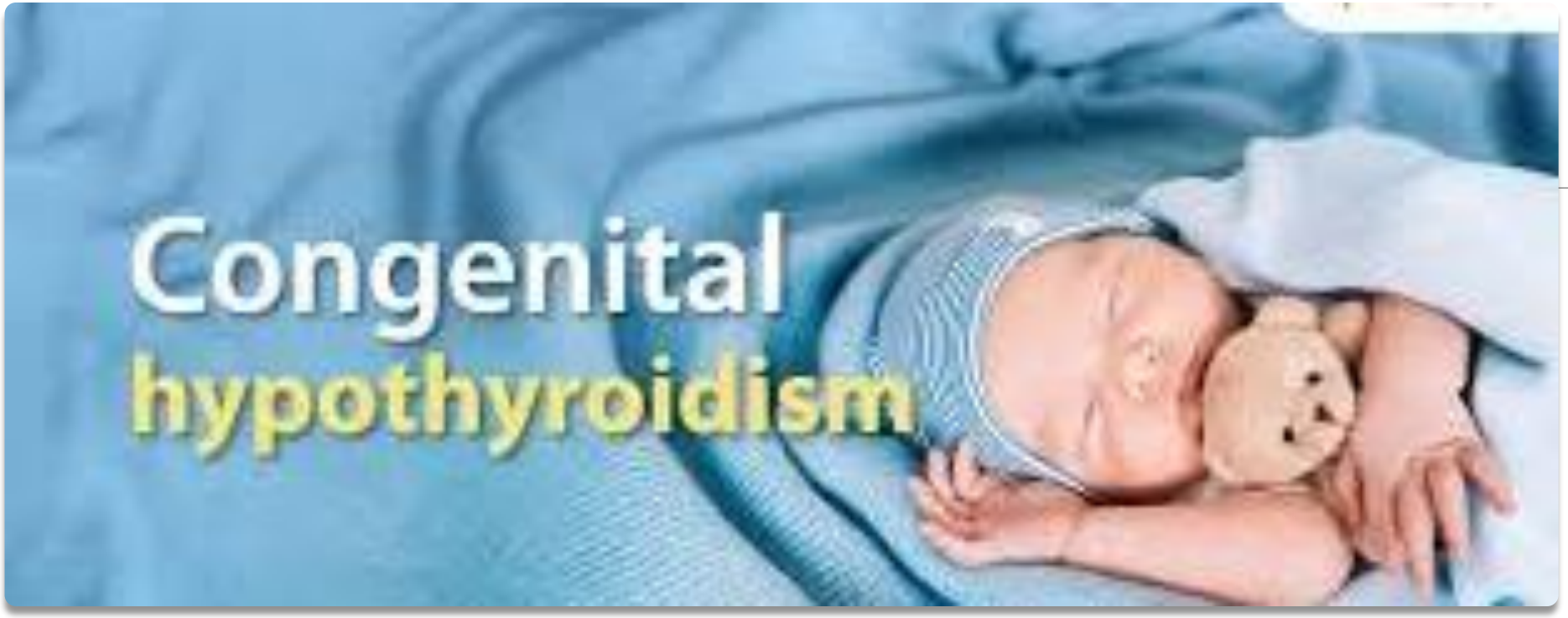

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Introduction

The thyroid gland secretes two types of hormones: thyroid hormone (TH) and calcitonin.

TH is made up of the hormones thyroxine (T4) and triiodothyronine (T3)

Physiologic Effects of Thyroid Hormone

- Regulates metabolic rate of all cells; protein, fat, and carbohydrate catabolism; and nitrogen excretion
- Regulates body heat production
- Regulates protein synthesis
- peripheral utilization of glucose
- Maintains appetite and secretion of gastrointestinal substances
- Maintains growth hormone secretion, skeletal maturation
- Is necessary for muscle tone and normal skin constituents
- Maintains cardiac rate, force, and output
- Maintains calcium mobilization
- Affects respiratory function
- Affects central nervous system development during first 2 to 3 years
- Affects milk production during lactation and menstrual cycle fertility
- Maintains sensitivity to insulin and insulin degradation
- Affects red cell production

Definition of Congenital Hypothyroidism (CH)

- Clinical condition associated with decreased function of the thyroid gland and a decrease in the circulating level of thyroid hormones

- Hypothyroidism is one of the most common endocrine problems of childhood. It may be either congenital or acquired.

Low levels of circulating thyroid hormones at birth characterize congenital hypothyroidism. If left untreated, congenital hypothyroidism causes mental retardation.

Improvements in newborn screening have led to earlier detection and prevention of cognitive dysfunction.

Pathophysiology of Hypothyroidism

- Thyroid hormones are important for growth & development & for metabolizing nutrients & energy

- When unavailable to stimulate other hormones or specific target cells, growth is delayed & intellectual disability develops

Causes of CH

- The most common cause of congenital hypothyroidism is iodine deficiency.
- Most commonly due to defect of development of the thyroid gland itself, resulting in an absent (athyreosis) or underdeveloped (hypoplastic) gland.
- Some of these cases of developmentally abnormal glands result from genetic defects, and some has no identifiable cause.
- Genetic defects of thyroxine or triiodothyronine synthesis within a structurally normal gland.

Clinical manifestations

Dry skin, puffiness around the eyes, sparse hair, constipation, sleepiness, lethargy, and mental decline.

Growth failure, delayed puberty, and excessive weight gain can also be seen.

- Anemia is due to decreased oxygen carrying requirement
- Feeding problems, failure to thrive, constipation

- Delayed closure of fontanelles, head to be large in relatior to the body
- Delay in sitting, walking and talking
- Limb disproportionately short in relation to the trunk
- Severe mental deficiency, and low IQ

CH Screening

- Every infant should have a newborn screen for thyroid hormone levels before discharge from the hospital or 2 to 4 days after birth
- Direct measurement of serum thyroxine and TSH
- Gurantee detection and treatment from the first weeks of life
- Majority of children who were treated early experienced normal growth and neurologic development and normal-range IQ values
- Diagnosis of primary hypothyroidism is confirmed by decreased levels of serum thyroid hormone (total or free T4)

Treatment of CH

Therapy is TH replacement, the same as for hypothyroidism in the infant. In children with severe symptoms, the restoration thyroid function is achieved more gradually with administration of increasing amounts of l-thyroxine over a period of 4 to 8 weeks.

Nursing care

- Follow up care includes:
  - Check thyroid function test every 4-6 weeks
  - Follow up on medications and dose adjustment

Caregiver Education

L-Thyroxine is an oral medication and is not available in a liquid form.

- The pill form must be crushed for infants and young children.
- It can be mixed with a small amount of formula or breast milk and placed in the nipple
- but it should not be placed in a full bottle of formula or breast milk because the infant will not ingest all the medication if he or she does not finish the bottle

Thank you