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Training for resident pediatrics in Pediatric endocrinology

The **ESPE e-learning website** is an interactive learning environment for up to date topics in paediatric endocrinology and diabetes consisting of chapters and problem solving cases. The website is globally available and free of charge.
Go to www.espe-elearning.org. Click on Login (right upper corner), if it is for the first time: Click on New Account Registration, and follow the steps of the login procedure and log in.

Go to the section **General Content.**

Per category the following chapters and cases have been selected for residents pediatrics. These can be used for prepartion for their exams:

Growth and Growth Regulation
Learning objective: This large module contains several chapters detailing the basic principles of growth and growth regulation including the growth hormone (GH) – Insulin-Growh Factor (IGF) system, auxology and body proportions. Furthermore the management of short and tall stature is provided. Here information of particular relevance are mentioned; in addition many practical tools ae provided in the problem solving cases.

See:
Chapter: Growth and growth regulation
- Growth assessment
- Postnatal Growth
- Growth Disorders
- Practical Approach

Chapter: Tall Stature
- Diagnosis
- Auxology
- Treatment
- Recommendations

Cases:
- John, a jittery baby
- Joyce, a girl with intrauterine growth retardation
- Emma, a girl with familial short stature
- Silvie, a girl with secondary growth retardation
- Why am I so short?
- Doreen a girl with fatigue

Puberty
*Learning objective***:** *This large module contains several chapters detailing the basic principles of normal development of puberty and its neuroendocrine regulation. Theee are separate chapters detailing the diagnosis and management of early/precocious and delayed puberty. Of specific interest are the chapters on Polycystic Ovary Syndrome and Breast disorders in adolescence. Here information of particular relevance is mentioned*

See:
Chapter: Puberty
- Puberty Staging
- Adrenarche
- Precocious Puberty (note: more detailed information can be found in: Chapter Management of early and precocious puberty)
- Delayed Puberty (note more detailed information can be found in: Chapter Delayed puberty, diagnosis and management)

Cases:
- Diana: a short girl in a tall family
- Nicole, a girl with early breast development
- Mario, a boy with delayed puberty

Thyroid disorders
Learning objective: this module contains an extensive chapter describing the basic principles of pre- and postnatal thyroid development. Major emphasis is put on the description of congenital hypothyroidism as well as hyperthyroidism. A separate chapter describes the management of children with acquired thyroid disease. Practical issues relating to the management are given in the cases.

See:
Chapter: Management of children with acquired thyroid disease
- Case B
- Case C

Chapter: Neonatal thyroidology
- thyroid hormone synthesis
- congenital hypothyroidism (part 1)
- congenital hyperthyroidism

Cases
- A 6 day old boy with abnormal newborn screening
- An obese boy with growth deceleration
- Neonatal thyrotoxicosis- an agitated newborn

Adrenal disorders
Learning objective: this module contains a chapter detailing adrenal gland development, regulatory mechanisms and subsequently the diagnostic approach and management of hypo- (Addison) and hypercortisolism (Cushing). In several problem solving casespractical tools are provided..

See:
Chapter: The adrenal gland
- The adrenal gland
- Steroidogenesis
- Hyperadrenocorticism part 1
- Case example
- Hypoadrenocorticism

Case

- A 12 yr old girl with abdominal pain

Disorders of Sex Development

Learning objectives: This large module contains many chapters describing the multidisciplinary approach of DSD.
Many practical issues are discussed in the followingchapters and cases:

See:
Chapters: The inititial endocrine approach to a suspected DSD

- Examination of the external genitalia

Chapter: Normal and abnormal gonadal development

Cases:

- A newborn with ambiguous genitalia
- Ranya a girl with delayed menarche

Calcium and bone

Learning objectives: this module contains chapters describing regulatory mechanisms of calcium and phosphate metabolism and tools for the initial recognition and management of metabolic bone disease of prematurity and life threatening conditions related to Calcium and Phosphate metabolism including hypophosphatasia. Moreover growth plate maturation and bone dysplasia is discussed.

Of particular relevance is:
Chapter: Calcium and Bone metabolism

- Players in calcium and bone metabolism
- Hormonal regulation of calcium homeostasis
- Vitamin D deficiency
- Rickets
- Disorders of calcium and bone metabolism

Chapter: Bone dysplasia

- Achondroplasia
- Hypochondroplasia

Cases:

- A girl with short stature and obesity
- A two weeks old baby
- A baby with convulsions

Hyperinsulinism

Learning objectives: in this chapter congenial hyperinsulinism of infancy is described in detail. The importance of early detection of hyperinsulinemic hypoglycemia for the prognosis and clinical outcome can not be overemphasized. Issues of potentionally relevance are:

See:
Chapter: Hyperinsulinism

- Background
- Causes of HH: transient, prolonged, permanent

Cases:

- Cases Elisa and Joe

Hypoglycemia vignettes in the section **Resource Limited Countries**::

- A lethargic baby
- Sonu, a 5 mo old baby with recurrent convulsions

Diabetes ISPAD Guidelines

Learning objective: This large module represents the' ISPAD Clinical Practice Consesnsus Guidelines 2018'. It contains many chapters detailing the diagnosis and management of diabetes in children and adolescents. In addition complementary to the chapters problem solving cases have been added to illustrate the clinical relevance and pitfalls.

See for instance:

Chapter: Diabetic ketoacidosis and hyperglycemic hyperosmolar state

Cases:

- Ketoacidosis at the onset of diabetes
- Fever and headache in an adolescent girl with type 1 diabetes

Hyponatremia

Learning objective: In this chapter basic mechanisms of osmoregulation are presented and subsequently the diagnostic approach and management of hyponatriemic syndromes such as Syndrome of Inappopriate ADH (SIADH) and Cerebral Salt Wasting (CWS) is discussed.

See:
Chapter: Hyponatremia

- First part diagnosis

Multiple endocrine deficits

Learning objective: In this chapter an overview is presented of endocrine disorders most frequently reported as sequelae of childood cancer treatment. In fact , many organs are involved not in the least the gonads.

See:
Chapter: Late endocrine effects of treatments for childhood cancer

- hypothalamic pituitary dysfunction

Obesity

Learning objective: In this chapter the molecular genetics is described of (mono-) genetic and syndromal obesity with generally manifestations in early childhood

Chapter: Molecular-genetic evaluation in childhood obesity

Case:

- A case of early onset obesity

(endocrine causes of obesity in cases from other categories: "A girl with short stature and obesity" (category Calcium and Bone), "Nikola, an 8-year-old boy with early onset obesity" (category Pituitary) and "An obese boy with growth deceleration" (category Thyroid Disorders), "Why am I so short?" (category Growth and Growth Regulation))

Pituitary

Learning objective: In this chapter the anatomy, embryology of the pituitary, the anterior and posterior pituiary hormones are explained, diagnosis, causes and treatment of congenital and acquired pituitary hormones deficiencies are discussed.

See:
Chapter: Hypopuitarism

Case

- Nikola, an 8-year-old boy with early onset of obesity

(cases from other categories: Silvie, a girl with secondary growth retardation (category Growth and Growth Regulation)