



GOVERNMENT OF JAMMU & KASHMIR
SHER-I-KASHMIR INSTITUTE OF MEDICAL SCIENCES
SOURA SRINAGAR

**Syllabus for Assistant Professor Posts of
the Department of Endocrinology,
SKIMS, SOURA.**

Syllabus for the specialty of ENDOCRINOLOGY

A. General Endocrinology

1. Hormone transport in circulation
2. Regulation of hormone secretion
3. Hormone action: Receptor types, signalling, receptor regulation of transcription
4. Genetic principles and genetics of Endocrinology
5. Immunological and nonimmunological laboratory technics for recognition of endocrine diseases.

B. Neuroendocrinology (Hypothalamus and Pituitary)

1. Neural control of endocrine secretion
2. Hypothalamic- pituitary unit: development and anatomical organisation
3. Hypothalamic hormones and neuroendocrine axes, TRH, CRH, GHRH, Somatostatin, prolactin- regulating factors, GnRH
4. Neuroendocrine diseases (hypothalamic hormone deficiency, disorders of regulation of GnRH secretion, disorders of regulation of prolactin-regulating factors.
5. Pituitary anatomy, physiology, and diagnostic evaluation
6. Physiology and disorders(hypersecretion and deficient secretion) of pituitary hormone axes(prolactin, GH, ACTH, gonadotrophins, TSH)
7. Developmental, genetic, and acquired causes of pituitary failure
8. Pituitary adenomas and masses: epidemiology, classifications,pathogenesis, genetic bases,clinical evaluation, imaging, hormonal assessment and management

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9. Prolactinomas: Epidemiology, pathology and pathogenesis, clinical, hormonal, and imaging evaluation, associated tumor syndromes, treatments and their complications

10. Nonfunctioning pituitary adenomas: presentations, endocrine manifestations, natural history, and treatment approaches
11. Gonadotrophin-secreting pituitary adenomas: Epidemiology, presentation, and management
12. GH-secreting pituitary adenomas: epidemiology, pathogenesis, associated syndromes, morbidity and mortality, clinical presentations, endocrine complications, diagnosis and management options and strategies
13. TSH-secreting adenomas: epidemiology, pathology, presentations, diagnosis, and management options
14. Posterior pituitary: anatomy, physiological regulation, diabetes insipidus and other polyuric syndromes, syndrome of inappropriate diuresis, syndrome of inappropriate antidiuresis

C. Thyroid

1. Anatomy and histology of thyroid, iodine and the synthesis and secretion of thyroid hormones, storage and release of thyroid hormones, plasma transport of thyroid hormones and metabolism of thyroid hormones.
2. Mechanism of thyroid hormone action and regulation of thyroid function
3. Pregnancy, aging, and fasting and illness and thyroid function
4. Methods of assessment of thyroid structure and function
5. Hyperthyroidism: Etiologies, pathogenesis, associated syndromes, clinical presentations, syndromic and etiologic diagnosis, treatment modalities and long term outcomes.
6. Hypothyroidism and thyroiditis: Etiologies, pathogenesis, associated syndromes, clinical presentations, syndromic and etiologic diagnosis, treatment modalities and long term outcomes.
7. Thyroid neoplasia (Diffuse nontoxic goiter, nodular thyroid disease, and thyroid malignancies): Presentations, imaging, scintigraphy, cytology, natural history, treatment approaches and long term follow up and outcomes
8. Thyroid crises: thyroid storm, myxedema coma

D. Adrenal

1. Anatomy and development of adrenal cortex, adrenal steroids, steroidogenesis and its control, glucocorticoid hormone action, glucocorticoid effects, therapeutic corticosteroids
2. Adrenocortical diseases: Cushing's syndrome, adrenal insufficiency, congenital adrenal hyperplasia, primary mineralocorticoid excess syndromes, adrenal incidentalomas, adrenal adenomas, adrenal malignancies
3. Adrenal dependent hypertension: pheochromocytoma, primary aldosteronism, cortisol resistance, Cushing's syndrome, congenital adrenal hyperplasia, hyperdeoxycorticosteronism

E. Physiology and pathology of female reproductive axis.

1. Reproductive functions of hypothalamus, anterior pituitary, and ovary: mechanisms, mediators, and synchronisation, folliculogenesis, ovarian steroidogenesis
2. Approaching a woman with reproductive dysfunction: clinical assessment and laboratory evaluation
3. Chronic anovulation: hypothalamic anovulation, hyperprolactinemia, androgen excess, premature ovarian insufficiency, polycystic ovarian syndrome
4. Hormone dependent gynecologic disorders (endometriosis, leiomyomata)
5. Menopause and its management
6. Hormonal contraception

F. Testicular disorders

1. Testis development, anatomy, and histology, spermatogenesis
2. Physiology of hypothalamo-pituitary-testicular axis.
3. testosterone synthesis, transport, metabolism, actions, and mechanism of action
4. Male hypogonadism: presentations as a function of age, epidemiology, etiologies, diagnosis, treatments, systemic disorders associated with

hypogonadism. Primary versus secondary hypogonadism. Androgen resistance syndromes.

5. Male sexual function and dysfunction

G. Disorders of sex development

1. Development of normal male and female reproductive systems.

2. Classification of DSD

3. Description of the individual disorders underlying the sex chromosome DSDs, 46XY DSDs, 46XX DSDs, and ovotesticular DSD

4. Investigation for DSD

H. Endocrine changes in pregnancy

1. Maternal physiologic and metabolic adaptations to pregnancy

2. Maternal endocrine alterations in pregnancy: Pituitary, thyroid, parathyroid, pancreas, adrenal, RAS

3. Placental hormone production

4. Endocrinology of fetal development

I. Growth in Children

1. Normal growth: measurement, growth charts, body proportions, parental target height, skeletal maturation, phases of normal growth,

2. IFG and IGFBP systems

3. Regulation of growth

4. Pathologic basis of retarded growth (GH-IGF1 axis disorders, GH insensitivity, abnormal IGF1 and IGF1 receptor signalling, growth disorders outside the GH-IGF1 axis)

5. Pathologic basis of excess growth

6. Evaluation and treatment of growth failure and excess growth

J. Physiology and disorders of puberty

1. Neuroendocrine control of puberty: Pubertal onset, patterns of gonadotrophin secretion,
2. Timing and onset of puberty, determinants of timing of puberty
3. Normal pubertal development
4. Hormonal changes and behavioural changes in puberty
5. Delayed puberty: causes, evaluation and treatments
6. Precocious puberty: types, causes, evaluation, and treatments
7. Induction of puberty in boys and girls

K. Disorders of bone mineral metabolism.

1. Ions and hormones in basic biology of mineral metabolism
2. Hormonal regulation of calcium and phosphate metabolism.
3. PTH, PTHrP, Vitamin D: Production, metabolism, actions and mechanisms
4. Hypercalcemic disorders: PHPT(isolated/syndromic), FHH, Lithium, malignancy associated, and others.
5. Hypocalcemic disorders: Hypoparathyroidism, vitamin D related
6. Disorders of phosphate and magnesium homeostasis
7. Osteoporosis: Burden, morbidity, presentations, evaluation, treatments and monitoring
8. Rickets and osteomalacia: nutritional and non-nutritional

L. Polyendocrine and neoplastic disorders.

1. Endocrine neoplastic syndromes types 1 through 5 and multiple endocrine and other organ neoplasia syndromes
2. Neuroendocrine tumors and disorders

3. Immunoendocrinopathy syndromes: APS 1, APS 2, other polyendocrinopathy deficiency autoimmune syndromes

M. Endocrinology of cancer management and survivorship

1. Fertility preservation during cancer treatment
2. Endocrine effects of cancer treatment

N. Endocrinology of HIV/AIDS

1. Adrenal, gonadal, and thyroid function in HIV/AIDS
2. Fluid and electrolyte perturbations, calcium homeostasis and bone changes,
3. Glucose homeostasis and pancreatic function
4. Lipids and cardiovascular disease in HIV

O. Endocrine disorders of critical illness.

1. Alterations in somatotrope, thyroid, and hypothalamic-pituitary-adrenal axes
2. Insulin resistance and stress hyperglycemia

P. Disorders of carbohydrate and fat metabolism

1. Insulin secretion: neural regulation of beta cell function, beta cell mass, insulin content in beta cell, insulin secretion and plasma insulin, insulin secretion characteristics in vivo, insulin secretion in fasting state and in response to IV glucose and oral stimuli, insulin secretion and insulin sensitivity, genetic influences on insulin secretion, insulin secretion in dysglycemic states
2. Diabetes mellitus: diagnosis and classification, epidemiology,
3. Pathophysiology of type 2 DM: pathogenesis(genetic factors in the development of T2DM, epigenetic risk of DM), insulin signalling (events downstream to insulin receptor phosphorylation, tissue-specific actions of insulin), insulin resistance and the risk of T2DM, role of gut microbiome and metabolome in insulin resistance and DM

4. Management of T2DM: General approaches to management, screening for DM, Glycemic targets during treatment of DM, monitoring glucose control during treatment, self-management education and support (medical nutrition therapy, physical activity and exercise, psychosocial management). Practical considerations like team approach, standardised versus personalised treatment approaches, identification of pathophysiologic subgroups
5. Glucose lowering pharmacotherapy in T2DM: orals (sulfonylureas, glinides, thiazolidinediones, DPP4 inhibitors, alpha glucosidase inhibitors, sodium-glucose transporter inhibitors and others), and injections (insulins, GLP 1 receptor agonists, amylin receptor agonists)
6. Type 1 DM: natural history, epidemiology, pathophysiology (histopathology, beta cell mass, dysfunction & death, pancreatic exocrine abnormalities in T1DM, genetics of T1DM, genetic risk scores, environmental factors, diagnosis, associated disorders, chronic complications, treatment including adjunctive drugs and beta cell replacing therapies, prevention and reversal of T1DM
7. Monogenic diabetes: monogenic diabetes as an opportunity for precision medicine, epidemiology, challenges in diagnosis, genomic variants
8. Complications of diabetes mellitus: mechanisms of hyperglycemia induced damage, diabetic retinopathy and other ocular complications, diabetic nephropathy (natural history, structural lesions in kidney, epidemiology, risk factors, comorbidities and associated complications, prevention and management), diabetic neuropathies, cardiovascular disease, diabetic foot
7. Hypoglycemia in diabetes mellitus and primary hypoglycemic disorders, physiological defences against hypoglycemia, hypoglycemia in infancy and childhood
8. Digitised approaches to diabetes diagnostics and therapeutics: continuous glucose monitoring systems, automated insulin delivery systems
9. Obesity : definitions, epidemiology, body energy homeostasis, energy expenditure, pathogenesis of obesity (genes, environment), metabolically normal obesity, complications stemming from obesity, diagnostic and therapeutic approaches to obesity
10. Disorders of lipoprotein metabolism: lipid biochemistry and metabolism, lipoprotein metabolism, clinical approaches to the diagnosis and treatment of dyslipidemia