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Disease of Endocrine system

Presented By;-

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Specialization:- Pharmaceutical Chemistry

1. Diabetes Mellitus

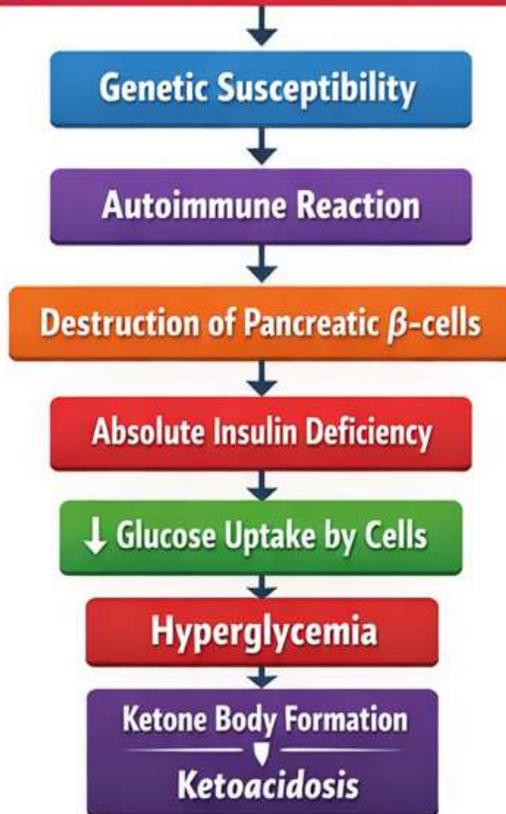
S.No	Aspect	Description
1	Definition	Diabetes Mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia
2	Cause	Due to defective insulin secretion, insulin action, or both
3	Main Feature	Disturbance of carbohydrate, fat, and protein metabolism
4	Hormone Involved	Insulin
5	Long-term Effect	Leads to microvascular and macrovascular complications

II. Types of Diabetes Mellitus

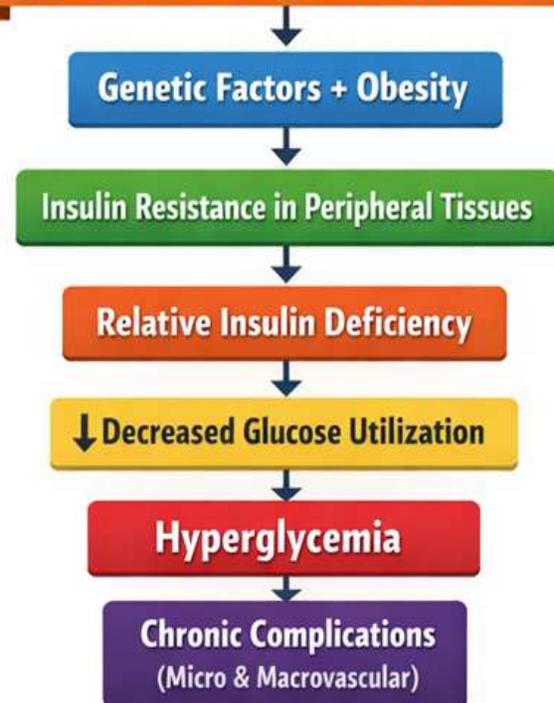
S.No	Type	Description
1	Type 1 Diabetes Mellitus	Autoimmune destruction of β -cells \rightarrow absolute insulin deficiency
2	Type 2 Diabetes Mellitus	Insulin resistance with relative insulin deficiency
3	Gestational Diabetes Mellitus	Diabetes diagnosed during pregnancy
4	Secondary Diabetes	Due to drugs, pancreatic disease, or hormonal disorders

Pathogenesis of Diabetes Mellitus

Type 1 Diabetes Mellitus (IDDM)



Type 2 Diabetes Mellitus (NIDDM)



II. Etiology of Diabetes Mellitus

S.No	Category	Causes
1	Genetic Factors	Family history, hereditary predisposition
2	Autoimmune	Destruction of pancreatic β -cells (Type 1)
3	Lifestyle Factors	Obesity, sedentary lifestyle, unhealthy diet
4	Hormonal Disorders	Cushing's syndrome, acromegaly
5	Drugs	Corticosteroids, thiazide diuretics
6	Pancreatic Diseases	Pancreatitis, pancreatic cancer

III. Diagnostic Tests for Diabetes Mellitus

S.No	Test	Diagnostic Criteria
1	Fasting Plasma Glucose (FPG)	≥ 126 mg/dL
2	Random Blood Sugar	≥ 200 mg/dL with symptoms
3	Oral Glucose Tolerance Test (OGTT)	2-hour value ≥ 200 mg/dL
4	HbA1c	$\geq 6.5\%$
5	Urine Test	Presence of glucose and ketone bodies

IV. Treatment of Diabetes Mellitus

S.No	Treatment Type	Details
1	Lifestyle Modification	Diet control, weight reduction, regular exercise
2	Oral Antidiabetic Drugs	Metformin, Sulfonylureas, DPP-4 inhibitors
3	Insulin Therapy	Required in Type 1 and uncontrolled Type 2
4	Monitoring	Regular blood glucose and HbA1c monitoring
5	Patient Education	Foot care, diet planning, hypoglycemia awareness

2. Thyroid Diseases

S.No	Aspect	Description
1	Thyroid gland	Butterfly-shaped endocrine gland in the neck
2	Hormones secreted	Thyroxine (T4), Triiodothyronine (T3), Calcitonin
3	Main function	Regulates metabolism, growth, development, body temperature
4	Thyroid diseases	Disorders due to excess or deficiency of thyroid hormones
5	Common conditions	Hypothyroidism, Hyperthyroidism, Goiter, Thyroiditis

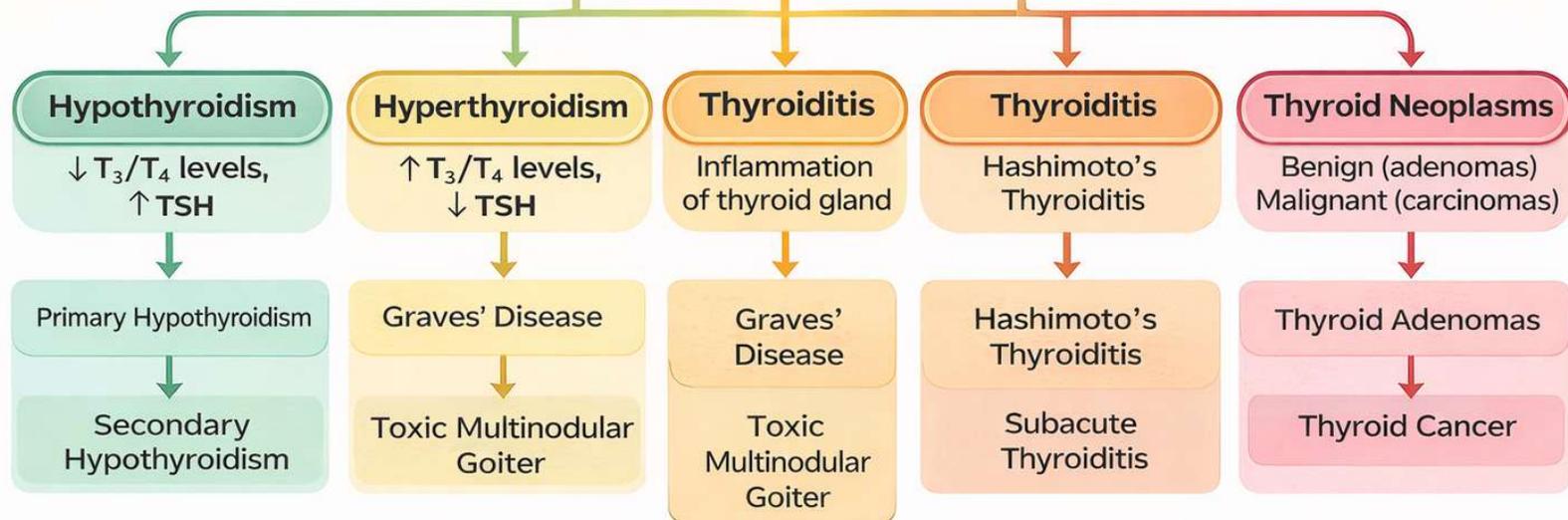
II. Types of Thyroid Diseases

S.No	Cause	Explanation
1	Autoimmune disorders	Graves' disease, Hashimoto's thyroiditis
2	Iodine deficiency	Leads to goiter and hypothyroidism
3	Genetic factors	Family history
4	Drugs	Amiodarone, lithium
5	Infections	Viral or bacterial thyroiditis
6	Radiation exposure	Risk of thyroid cancer
7	Pregnancy related	Postpartum thyroiditis

Pathogenesis of Thyroid Diseases



Thyroid Dysfunction



II. Diagnostic Tests for Thyroid Diseases

S.No	Test	Purpose
1	TSH (Thyroid Stimulating Hormone)	Primary screening test
2	Serum T3 and T4	Measures thyroid hormone levels
3	Thyroid antibodies	Detect autoimmune disorders
4	Radioactive iodine uptake test	Evaluates thyroid function
5	Ultrasound of thyroid	Detects nodules, size, structure
6	Fine needle aspiration biopsy	Diagnoses thyroid cancer
7	CT / MRI	Advanced evaluation if needed

III. Treatment of Thyroid Diseases

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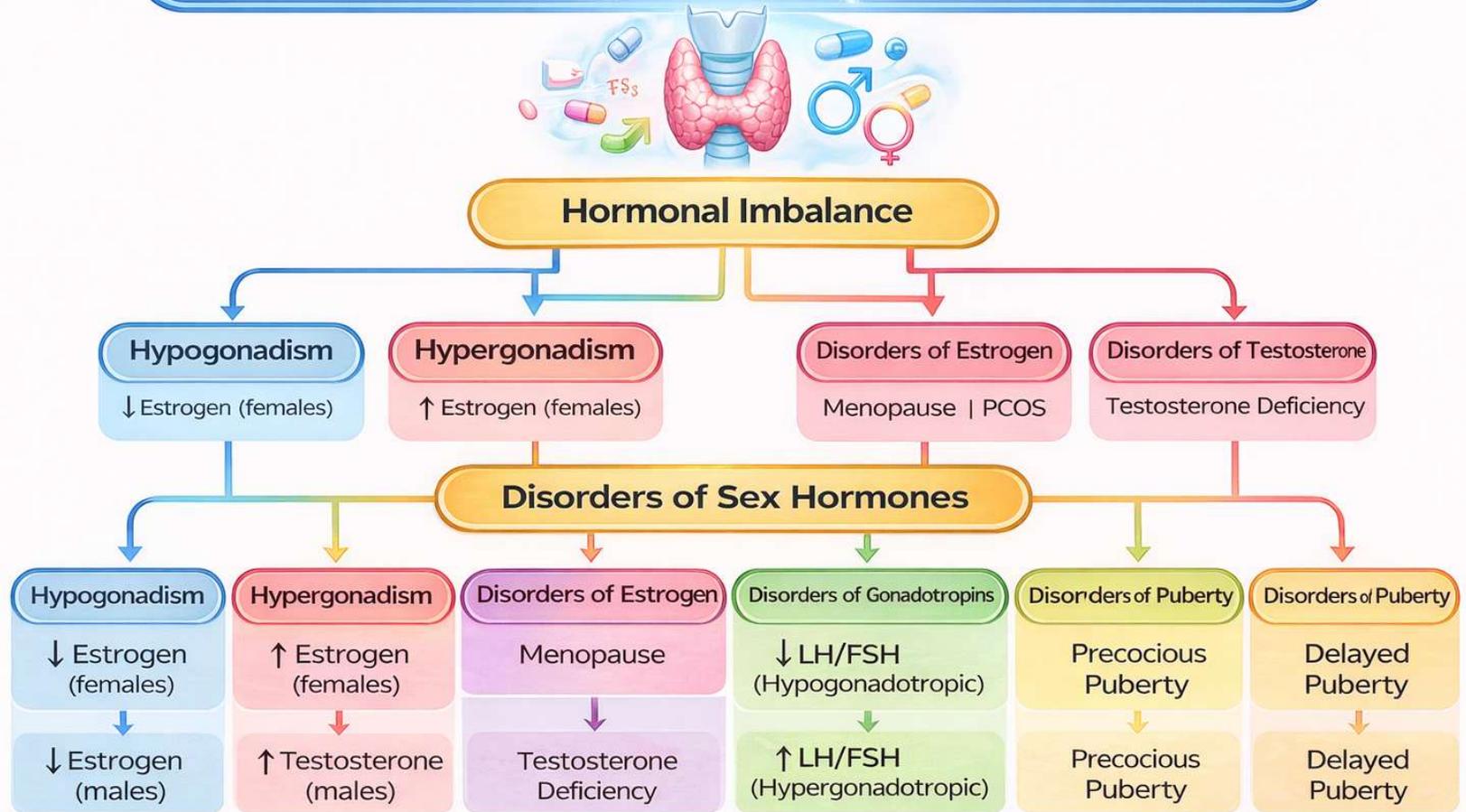
3. Disorders Of Sex Hormones

S.No	Heading	Details
1	Definition	Disorders caused by imbalance (deficiency or excess) of sex hormones such as estrogen, progesterone, testosterone, LH, and FSH.
2	Hormones Involved	Estrogen, Progesterone (female); Testosterone (male); Gonadotropins (LH, FSH).
3	Organs Affected	Ovaries, testes, pituitary gland, hypothalamus, adrenal glands.
4	Clinical Impact	Affects sexual development, fertility, menstruation, libido, secondary sexual characters.
5	Age Group	Can occur in childhood, adolescence, or adulthood.

II. Etiology of Disorders of Sex Hormones

S.No	Category	Causes
1	Primary Causes	Ovarian failure, testicular failure, congenital abnormalities.
2	Secondary Causes	Pituitary or hypothalamic dysfunction.
3	Genetic Causes	Turner syndrome, Klinefelter syndrome.
4	Endocrine Disorders	PCOS, adrenal hyperplasia, thyroid disorders.
5	Tumors	Pituitary adenoma, ovarian or testicular tumors.
6	Drugs & Lifestyle	Steroids, chemotherapy, alcohol, obesity, stress.
7	Aging	Menopause, andropause.

Pathogenesis of Disorders of Sex Hormones



II. Diagnostic Tests for Disorders of Sex Hormones

S.No	Diagnostic Test	Purpose / Findings
1	Hormonal Assays	Measure estrogen, progesterone, testosterone, LH, FSH.
2	Blood Tests	Prolactin, thyroid hormones, cortisol.
3	Pelvic / Testicular Ultrasound	Detect ovarian cysts, tumors, testicular abnormalities.
4	MRI / CT Scan	Evaluate pituitary or hypothalamic lesions.
5	Semen Analysis	Assess male fertility and androgen status.
6	Menstrual History	Identify ovulatory and menstrual disorders.
7	Genetic Testing	Detect chromosomal abnormalities.

III. Treatment of Disorders of Sex Hormones

S.No	Disorder Type	Treatment
1	Hormone Deficiency	Hormone replacement therapy (HRT): estrogen, progesterone, testosterone.
2	Hormone Excess	Anti-hormonal drugs (anti-androgens, aromatase inhibitors).
3	PCOS	Oral contraceptives, metformin, lifestyle changes.
4	Hypogonadism	Testosterone therapy (males), estrogen/progesterone (females).
5	Pituitary Disorders	Dopamine agonists, surgery, radiotherapy.
6	Puberty Disorders	GnRH analogs (precocious puberty).
7	Supportive Therapy	Weight management, nutrition, counseling.



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