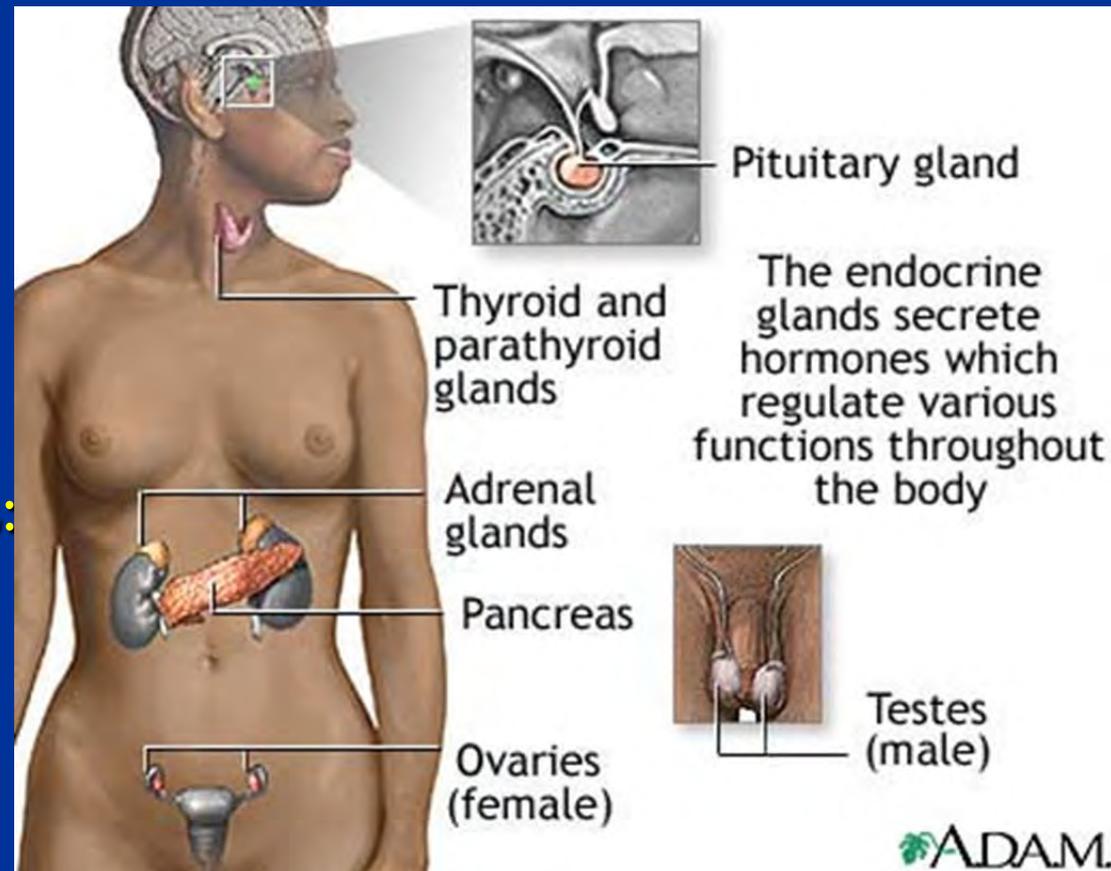


ENDOCRINE DISORDERS IN THE ELDERLY (part 1)

TANJA KEMP
INTERNAL MEDICINE:
ENDOCRINOLOGY



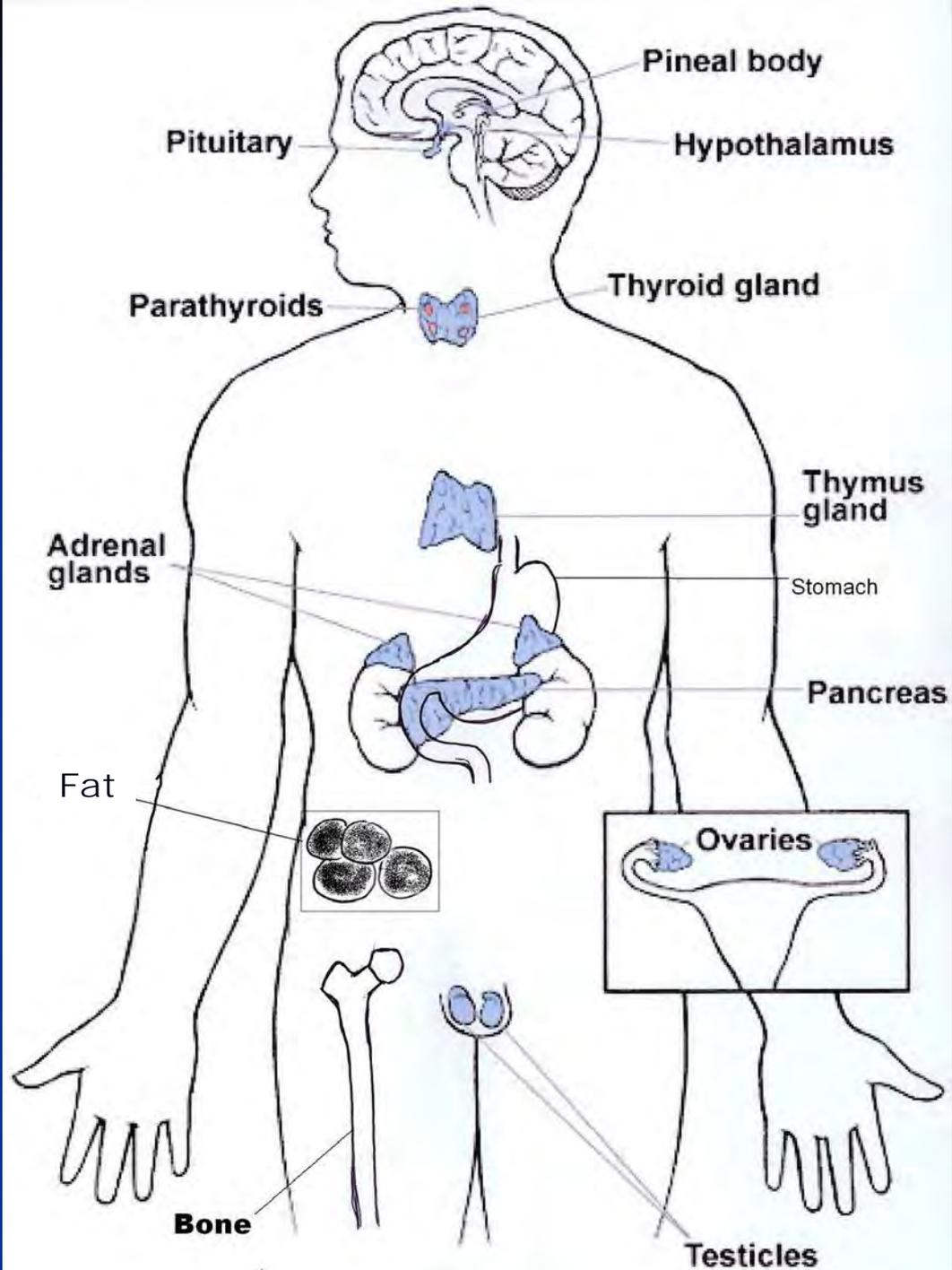
Outline of talk:

- **Introduction:** Endocrinology
- **Diabetes mellitus** - Type 1
- Type 2
- **Osteoporosis**
- **Thyroid disorders** - Hyperthyroidism
- Hypothyroidism
- **Hypogonadism** – Male
– Female
- **Growth hormone deficiency** in adults

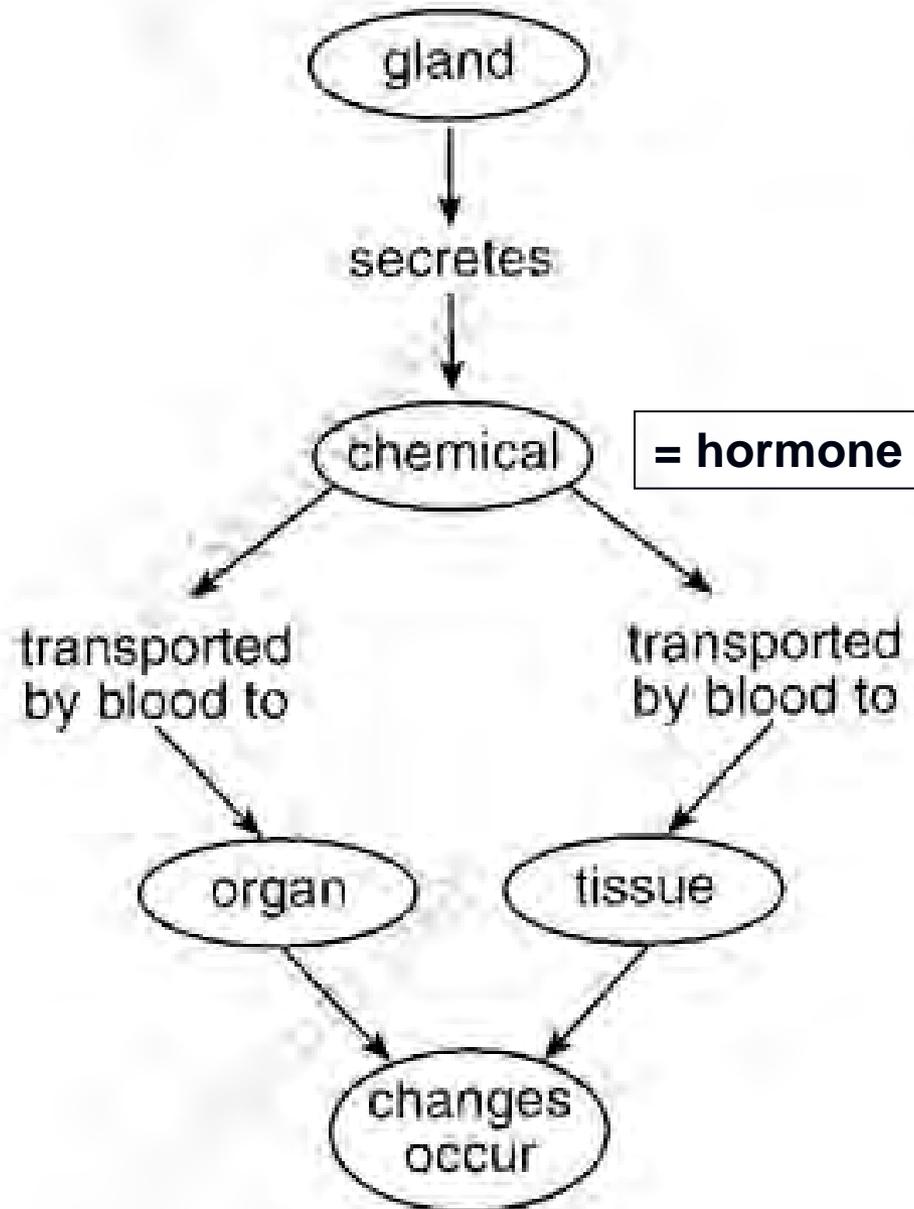
INTRODUCTION

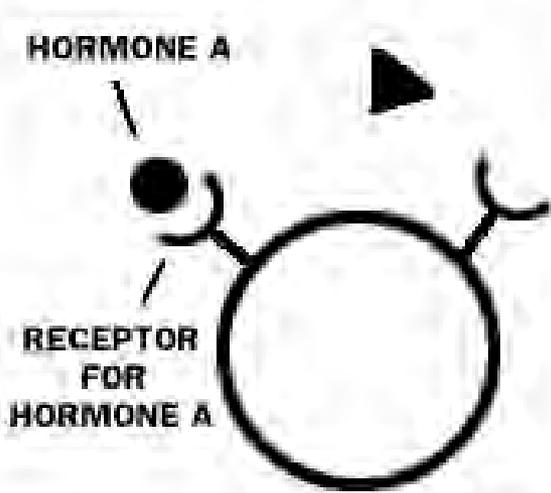
Endocrine system:

- The bodily system that consists of the **endocrine glands** and the **hormones** that they secrete
- Endocrine system is composed of **ductless glands** that secrete hormones directly into the blood
- = the major **controller** of the flow of information between different cells and tissues of the body

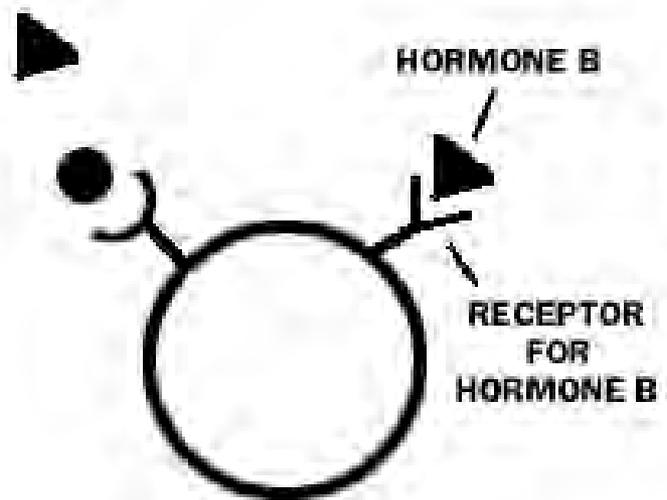


- **Hormones** = **chemical messengers**, produced and stored in endocrine glands
- Controls and regulates the activity of certain cells or organs (**generate a response**)
- When secreted, they exert effects on target tissues or glands **distant** from the source
- They bind to specific **receptors**
- Hormones regulate **various human functions**, including metabolism, growth and development, tissue function, and mood

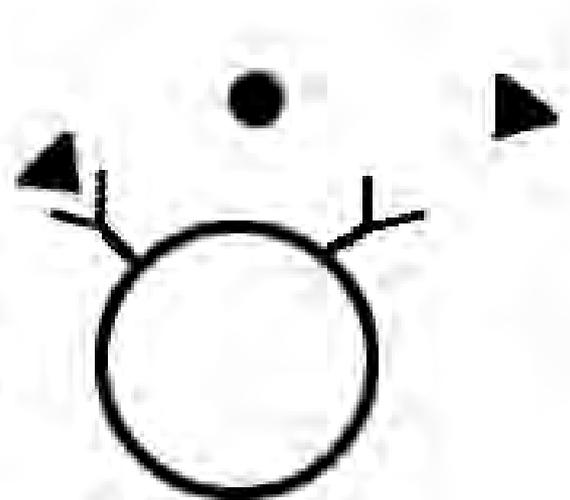




TARGET CELL FOR HORMONE A



TARGET CELL FOR HORMONES A & B



TARGET CELL FOR HORMONE B

General principles

- Must distinguish between endocrine conditions **caused by aging** (eg gonadal failure) from **age-associated conditions** (eg thyroid problems more common in the elderly)
- All organs have different **reserve capacities**; endocrine diseases often present with symptoms in the **most compromised organ system**
- The elderly often have multiple diseases and take many medications that may **mimic or mask** the usual presentation of an endocrine disease

DIABETES MELLITUS

Definition



- ☆ Diabetes mellitus - “Honey urine”
- ☆ Clinical condition characterised by a chronically **ELEVATED BLOOD SUGAR LEVEL**
- ☆ Caused by an **absolute** or **relative** insulin deficiency
 - **Absolute** = insulin not produced by pancreas
 - **Relative** = insufficient insulin or insulin action for the body’s requirements

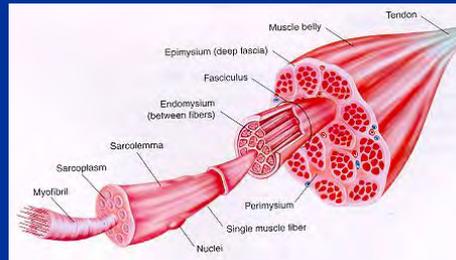
- ☆ Disease which affects the **metabolism** of carbohydrates, protein and fat
- ☆ Results in **complications** in every tissue and organ of the body

Insulin actions

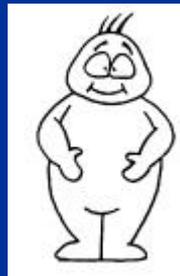
■ Liver



■ Muscle



■ Adipose tissue



Classification

- **Type 1** diabetes mellitus
 - autoimmune
 - idiopathic
- **Type 2** diabetes mellitus
- **Gestational** diabetes mellitus
- **Other** - includes endocrinopathies, exocrine pancreatic problems, genetic defects of beta cell function, drug-induced diabetes & genetic syndromes associated with diabetes

Type 1 diabetes mellitus

- State of **absolute** insulin deficiency
- Secondary to pancreatic β -cell destruction
- Dependent on **insulin** for survival
- Altered fat metabolism results in **ketone** production

Presentation type 1 DM

- 10 - 20% of all diabetics
- Usually presents in childhood
- Marked **loss of weight**
- **Polyuria**
- **Polydipsia**
- Blurred vision
- Diabetic ketoacidosis

Type 2 diabetes mellitus

- Insulin resistance → **hyperinsulinaemia**
- Varying degree of β -cell dysfunction
- **Classic type 2 diabetic:**
 - **Obese** > 80 % → insulin resistance
 - **Non-obese** < 20 % → β -cell dysfunction

Insulin Resistance

Definition:

A state where a given concentration of insulin is associated with a **subnormal glucose response** as a result of **insensitivity** of the peripheral tissue to the effect of insulin. This gives rise to **hyperinsulinaemia.**

Clinical risk factors for type 2 diabetes mellitus

- ☆ Age
- ☆ Obesity
- ☆ Lack of physical activity
- ☆ Family history of diabetes
- ☆ Previous gestational diabetes
- ☆ Secondary causes: drugs, endocrinopathies
- ☆ Race / geography

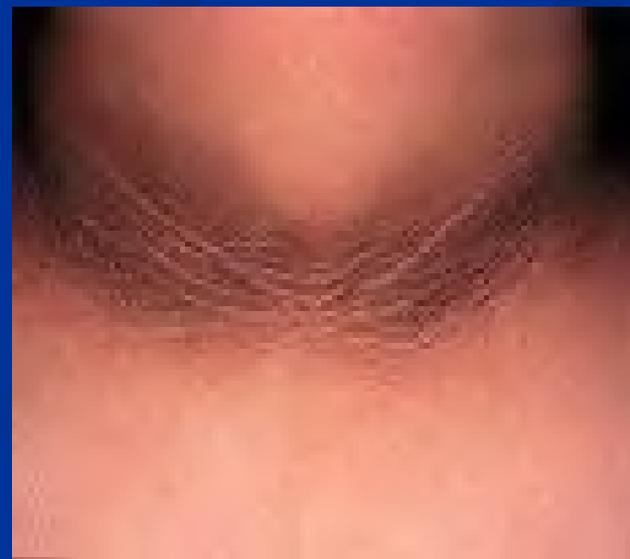
Clinical picture

- Disease of **lifestyle**
- Do not need insulin to survive, but later on may develop ↓ insulin secretion
- Usually **incidental** finding, or following a long period of subclinical illness
- May present with **complications** e.g. neuropathy, myocardial infarction, diabetic foot
- Usually present in a mild form for **5-10 years** before diagnosis; strong family history
- Presentation may be **precipitated** by pregnancy, drugs, illness

Acanthosis nigricans



Acanthosis nigricans. A condition in which the skin in certain areas, especially the neck, becomes thick and darkened with large, flat, or warty growths.



- **Subacute and may present with:**
 - ~ **Chronic tiredness**
 - ~ **Pruritis** – balanitis or vaginitis
secondary to candidiasis
 - ~ Recurrent **skin infections, other infections, muscle cramps** in legs
 - ~ **Blurred vision** secondary to osmotic changes in the lens

Type 1

VS

Type 2

- Younger, thinner
- Symptoms: weeks
- Weight loss: +++
- HLA DR3/DR4
- 30 - 40% concordance twins
- Autoimmunity, association with other autoimmune diseases
- Insulin deficient, DKA, insulin essential
- Eventual disappearance of C- peptide

- Older, often obese
- Months to years
- Weight loss: +/-
- No HLA links
- 90% concordance in identical twins
- No evidence of immune disturbance
- Partial insulin deficiency, may require insulin late in disease
- C-peptide persists

Diabetic complications

■ Mainly vascular:

- ☆ **Microvascular** (more prominent in type 1)
- ☆ **Macrovascular** (more prominent in type 2)

■ Also:

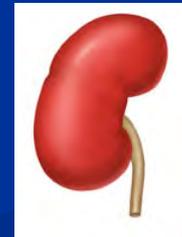
- ☆ Diabetic foot
- ☆ Infections
- ☆ GIT
- ☆ Skin
- ☆ Connective tissue and joint involvement
- ☆ Bone and mineral metabolism

Microvascular complications

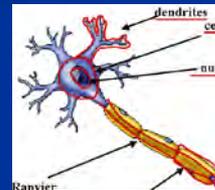
- Diabetic retinopathy



- Diabetic nephropathy



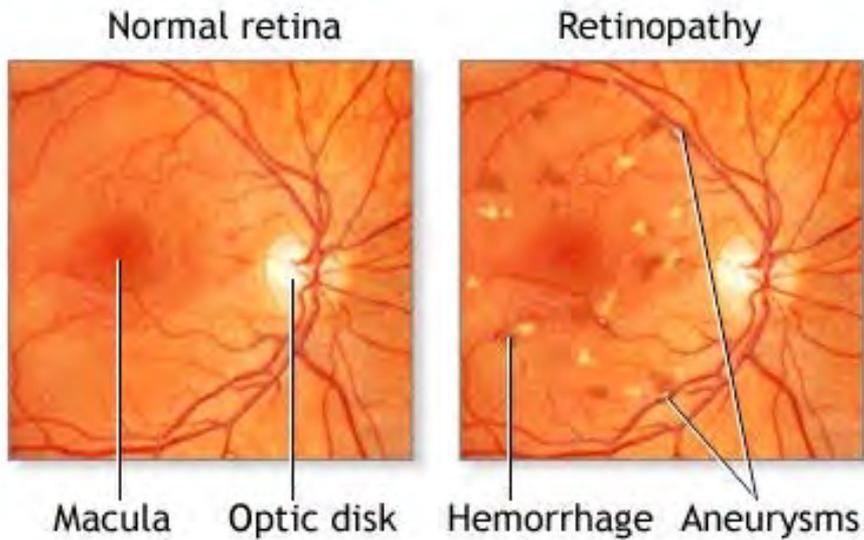
- Diabetic neuropathy



MICROVASCULAR:

1. Diabetic retinopathy and other eye involvement

Diabetic retinopathy / Cataracts



ADAM.



2. Renal complications

