

Hyper-Thyroidism + Graves Disease. ✓✓

Gross weight loss - 6 months - 10kg

Palpitations

Trembling of hands

Prominence of eyes

Heat intolerance

Diarrhea

Menstrual irregularities

↑ T₃, ↑ T₄

Swelling - walnut size

Hard

Multinodular.

- Diagnosis

- Investigation

- Treatment

- Treatment - Palpitation
Eye changes.

Diagnosis : Graves Disease Due to Hyperthyroidism.

Investigations:

(Clinical)

Weight loss
↑ Anorexic
Heat intolerance
Diarrhea
Oligomenorrhea
Lid-Lag
Lid-retraction
Exophthalmos.

Dermopathy
Ophthalmopathy
Diffuse Goiter

Diagnosis:

* Unique Feature - Diffuse Goiter
= Ophthalmopathy
Dermopathy

Thyroid function -
Test ↑ T₃, T₄
↓ TSH

Radio-active - Bilateral
Iodine uptake - Diffuse ↑ uptake.
(RAI)

Thyroid receptor - +ve.
antibodies

Treatment

① - Beta-blockers :

Agents = Propranolol (160 mg)

↓ peripheral conversion of T_4 to T_3

↓ Tachycardia, tremors.

② - Anti-Thyroid drugs :

Agents = Carbimazole (40-60 mg)

Methimazole (40-60 mg)

Propylthiouracil (400-600 mg)

Complications :-

Hypersensitivity Rash ✓

Aggranulocytosis ✓ * During pregnancy

= Arthralgia, Fever, Teratogen.

U = Hepatocellular
Necrosis.

1st trimester = PTU (Methimazole is
teratogen)

2nd + 3rd trimester = Methimazole (PTU = liver
failure)

③ Radio-active :- Iodine

Contra-indication :-

Absolute = Pregnancy

Relative = Ophthalmopathy

Complications :-

Hypothyroidism

worsens ophthalmopathy

④ - Eye changes

Steroid

IV-immunoglobulin.

Methyl cellulose eye drops

having palpitation with heart rate 106/min regular, fine tremors, heat intolerance, diarrhea episodes, and weight loss.

Q - 45 yr-old Female pt presented with gradual loss of weight approx 10 kg in last 6 months. She complain of severe weakness, insomnia, palpitation, diarrhea and menstrual irregularities also. O/E her B.p is 135/85 mmHg, pulse 113/min and irregular irregular. She is afebrile but she feels feverish.

- Gradual loss of weight
- Palpitations
- Diarrhea
- Heat intolerance
- Menstrual irregular
- Eye protrudent.

→ Diagnosis

→ Investigations

→ Treatment

→ Give specific Rx for palpitations + Pulse for Eye changes.

→ Medicine along with instruction

Palpitations

Vasodilators

- Beta-blockers (Propranolol)

- Calcium-channel Blockers (Nifedipine)

Eye :
changes

Steroid

IV-immunoglobulin

Methyl cellulose eye drop.

Hypothyroidism ✓

Endo (Med)

Notes by Fahad Rasool

Weight gain, ↓ appetite

Somnolence ↑ sleep

Weight gain

Constipation

Pedal edema

Hoarseness of voice

Palpitations

Carpal tunnel syndrome

Cold intolerance

Diagnosis :-

Hypothyroidism

Confirmatory:

signs

- ① - Hoarseness of voice
- ② - Delay tendon reflex
- ③ - Dry skin
- ④ - Bradycardia
- ⑤ - Diastolic hypertension
- ⑥ - Periorbital edema

How to diagnose:

History

Examination

Investigations

Investigations:-

① - Thyroid function Test :-

- * Primary hypothyroidism ↓ T₃ ↓ T₄ ↑ TSH
- * Secondary hypothyroidism ↓ T₃ ↓ T₄ ↓ TSH
- * Tertiary hypothyroidism ↓ T₃ ↓ T₄ ↓ TSH

② - Other Tests :-

- ↑ creatinine kinase (CK)
- ↑ Lactate dehydrogenase (LDH)
- ↑ Aspartate Transaminase (AST)
- ↑ Cholesterol
- ↓ Sodium

Associated with ECG:

Sinus Bradycardia

ST-T wave abnormalities.

Associated with HLA-DR₃ & HLA-DR₅

Anti-TPO antibodies - +ve

Anti-Thyroglobulin - +ve.

Treatment :-

* → Life-long Treatment with
- Levothyroxine. Dosage (1.5-1.7 $\mu\text{g}/\text{kg}/\text{d}$)

Example

50 $\mu\text{g}/\text{kg}/\text{day}$ for 03 weeks.

100 $\mu\text{g}/\text{day}$ for 03 weeks.

100-150 $\mu\text{g}/\text{day}$ as a maintenance
dose.

* → For ischemic heart disease & Elderly

Levothyroxine - \uparrow Myocardial - Angina
O₂ demand MI.

Starting Dose \approx 25 $\mu\text{g}/\text{day}$.

* → Pregnant woman.

\uparrow - serum Thyroxin binding globulin

\uparrow -dose of 25-50 μg to maintain
normal TSH.

* → Palpitations :

Low-Dose Levothyroxine

+

vasodilators & Beta
blockers.

Follow-up:

Bring the TSH within normal range.

TFT's in 6 weeks at least.

If TSH ↑ - ↑ dose of Thyroxin.

Take Medication at Night time

+
Vitamin C.

- ✓ 30 yr old Female
- ✓ Diagnosed with Diabetes recently
- ✓ Random sugar levels 360 mg/dl
- ✓ HbA1c 10.5%

- Management.

Dietary

Life style

Drug - e side effects

- ✓ What type of Insulin available?
Name, Use, GT, PT, L, T ?
- ✓ Side effects of Insulin Use
- ✓ site for insulin injection.
- ✓ What's HbA1c and Factors affecting it
- ✓ Skin problems due to diabetes
- ✓ Diet chart.

Q. 30 yr. old female presented with recently Diagnosed DM. Her blood sugar random is 360 mg/dl, HbA1c is 10.5%.

Give Management.

General →

Dietary Management: ✓

* Low sugar diet
High in starchy carbohydrate

* High in Fiber

* Low in Fat.

✓
Maintain - Glucose chart.

Exercise ✓
To decrease weight
To decrease BMI

Specific :

Oral - hypoglycemic

① - Metmorfin (Biguanide)

↓ HbA1c by 15% + weight loss

First line Therapy For type-II diabetes IR of weight

Also can be in obese with Type-I

Disadvantages

↓
GI-upset - Nausea, ↓ Vit B12.
- Diarrhea
- Abd. pain

Lactic acidosis

CI -
Renal Failure.

Sulphonylureas: (Insulin secretagogues)

↓ HbA_{1c} by 1.5%

Rx - non-obese with Type-II

Agents 1st gen - Tolbutamide, Chlorpropamide
2nd gen - Glipizide

Disadvantage - Hypoglycemia
weight gain

Alpha-glucosidase Inhibitors:

Reduce glucose Absorption from gut
↓ post-prandial blood glucose

Agents : Acarbose

Disadvantages : Diarrhea
Abdominal cramp

Thiozolidinediones:

↑ Insulin sensitivity

↓ HbA_{1c} by 1%

Disadvantage :

weight gain
Hepatotoxicity
Fluid retention
Bone fracture
MI

Gliptins :

(GLP-1) Hormones

stimulate insulin secretion

Agents : Sitagliptin
Vildagliptin

Exentide :

(GLP-1) agonist

Diarrhea

Insulin	Formulation	Uses	Onset	Peak	Duration
Rapid acting	Lispro Aspart	<ul style="list-style-type: none"> Usually taken before meal Covers blood glucose elevation from eating 	5-15 mint	60-90 mint	2-4 hrs.
Short-acting	Regular	"	30-60 mint	2-4 hrs	5-8 hrs.
Intermediate acting	NPH Lente	Cover blood glucose when short-acting stop works.	1-2 hrs	4-8 hr	7-14 hrs
Long-acting	Glargine	"	1-2 hrs	-	18-24 hrs

Q. Common-sites:

sub-cutaneously - Abdomen
Buttocks
Arm
Leg.

Q. Side-effects of Insulin:

Hypoglycemia
Weight gain
Peripheral edema
Local allergy
Lipodystrophy at injection site.

Q. HbA1c:

- ✓ Attachment of glucose to N-terminal amino acid valine of beta-chain of hemoglobin.
- ✓ Measures Avg. Blood sugars levels over last 2 to 3 months.
- ✓ Usually done after 3-6 months.
- ✓ Also tells us progress of anti-diabetic therapy.

Q. Factors affecting HbA1c:

HbF, HbG
Uremia
Hyperglycemia
Alcohol
↑ Bilirubin.
Aspirin.

Diet chart =

Protein = 1g/kg

Fat = < 35% of Total energy intake

Carbs = 40-60% of Total energy Diet.

Vitamins = Best taken as fruits and vegetables

Salt = Restrict to 6g/day

Restrict to < 3g/day

Alcohol = Avoid

↓ BMI + weight.

Dermatological Features of D.M:

Diabetic Dermopathy

Diabetic thick skin

Acanthosis Nigricans

Yellow Nails

Bullous

Scleredema

Shin Spots

Coxsackemia

DKA

- ✓ Long-standing Diabetes
- ✓ HTN
- ✓ Unconscious on bed.
- ✓ Hyperlipidemia
- ✓ semi-conscious with uncontrolled diabetes
- ✓ Fruity smell
- ✓ Ketones
- ✓ Proteinuria

Diagnosis -
Investigation -

DKA

Q- 70 yr. old man with Long-standing diabetic who is recently diagnosed of having HTN & hyperlipidemia was found unconscious in his bed in his bed in the morning.

Q- A lady of 55 yr. with history of Type-II D. mellitus for last 04 yrs and hypertension and hyperlipidemia for last 03 yrs. She has grossly uncontrolled diabetes while HTN and hyperlipidemia have variable control as shown by the record. Now she was presented in emergency with blood sugar level of 550 mg/dl in semi-conscious state with severe dehydration and Fruity smell from breath. A diagnosis of DKA is made after checking urine ketones which are (+++) proteins.

Diagnosis

Causes

Investigation

Rx

Complication.

Diagnosis → Diabetic ketoacidosis

causes → 6 I's.

Insulin Deficiency = Failure to take enough insulin or produce.

Iatrogenic = Glucocorticoids.

Infection = Pneumonia
UTI

Inflammation = Pancreatitis

Cholecystitis

Ischemia & Infarction = Myocardial infarction

Gut ischemia

Cerebral ischemia

Intoxication = Alcohol
Drugs

Investigations:

Blood glucose = Elevated

Ketosis = Positive ^{urine} Ketones
+ve. Serum Ketones

Increased BUN : Cr ratio (Dehydration)

Pseudo-hyponatremia

Hypokalemia

Arterial Blood gases

↳ ↑ Anion gap metabolic acidosis

Plasma bicarbonate < 12 mmol/L
(severe acidosis)

CBC = leukocytosis

ECG.

Treatment:

Principles of Management

Short-acting insulin

Fluid replacement

Potassium replacement

Antibiotics

Short-Acting insulin

Regimen

① → 10 U Bolus of IV insulin followed by 0.1U/kg/hr.

② → Continue Insulin Drip until anion gap is normal.

③ → Anion-gap normal → Subcutaneous Insulin.

④ → Continue IV insulin for 30 minutes after starting SC insulin to prevent rebound ketoacidosis.

Fluid-Replacement:

ECF loss - By normal saline

ICF loss - By Dextrose.

Regimen (NS)

1-3 L = First Hour

1L = Over following 1 hrs

1L = Over following 2 hrs

1L = Over following 4 hrs

Dextrose

Start 10% dextrose

at 125ml/hr IV when Bglucose
< 250mg/dl

Potassium Replacement :

Regimen - If serum K is ≥ 5.5 = No replacement

" " " < 5.5

Start potassium replacement.

Add 20-40 mEq/L of KCl
to each one liter of
fluid.

If serum K is < 3.5

Then call senior for help.

Additional :

✓ Antibiotics for infection

✓ Serum bicarbonate infusion in case
of severe acidosis.

✓ Catheterization if no urine passed

✓ DVT prophylaxis - LMWH.

✓ Phosphate replacement if < 1mmol/L

Plasma → Systolic BP is < 90 mmHg.
expander

Cushing-Syndrome. ✓

- 40 yr Female
- Case of colitis
- Weight gain
 - Hypertension
 - Bone aches
 - Bruises
 - Purpleish striae
 - DMellitus
 - Difficulty in standing.

Diagnosis

Rx

Complication

Diagnosis :

Cushing Syndrome

How to Diagnose :

History

Examination

Investigations :

Investigations :

	Pituitary CS	Adrenal C-S	Ectopic
serum cortisol	↑	↑	↑
24 hr urine cortisol	↑	↑	↑
Low-Dose Dexamethasone	Not-suppressed	Not Suppressed	Not suppressed
Plasma ACTH	↑	↓	↑
High Dose Dexamethasone	suppressed	-	Not Suppressed.

Rx :

① → Cushing Disease
(Pituitary Tumor)

↓

Trans-sphenoidal →
S-Removal of
Tumor

If not successful
Radiotherapy +
Bilateral adrenalectomy

③- Adrenal Tumor :

surgical removal tumor

③- Ectopic ACTH producing Tumor :

surgical Removal

Others :

- Gluco-corticoid replacement therapy (After trans-sphenoidal surgery)

- Gluco-corticoid + Mineralocorticoid (After adrenal-ectomy) for life.

Complications :

- ✓ Diabetes
- ✓ Hypertension
- ✓ Obesity
- ✓ Osteoporosis
- ✓ Myopathies
- ✓ Metabolic acidosis
- ✓ Depression
- ✓ Bruising



Addison's Disease.



- Generalized weakness
- Necturia
- ↑ Thirst
- Stem lesion both stms
- weight loss.

Diagnosis

Investigation

Rx.

Q- 50 yr. old male presented with complaint of generalized weakness, nocturia resulting in ↑ Thirst, skin lesion at both shins and weight loss despite more than normal dietary intake? *Fatigue, Hypotension

- Diagnosis

- Investigations

- Complications

- Rx

✓ Skin-hyperpigmentation

✓ Hypoglycemia

✓ Hyponatremia

✓ Metabolic acidosis

✓ Hyperkalemia

Diagnosis: Addison Disease

Investigations:

Blood sugar Short ACTH-stimulation Test

Arterial Blood gas ✓ Administration of 250 µg ACTH
Urine analysis ✓ by IM injection at any time of day

✓ Taking Blood samples - Plasma Cortisol
ACTH

Cortisol

Normal = ↑ cortisol

Secondary = Fail to increase

Renal insufficiency

ACTH

↓

* Primary adrenal - High ACTH
insufficiency

* Secondary adrenal - Low ACTH.
insufficiency

Treatment :

① - Primary Adrenal Insufficiency :

Glucocorticoid = Hydrocortisone

Mineralocorticoid = Fludrocortisone.

Secondary adrenal insufficiency: Cortisol
Only Glucocorticoid
Mineralocorticoid - not given