

1 Thyroid & Pancreas

2 7 yr old Doberman

- lethargic
- poor exercise tolerance
- obese

3 clinical examination

- thickened skin
- bilateral symmetrical alopecia

4 diagnosis

- hypothyroidism
- confirmed by blood T4 level

5 treatment

- thyroxin
 - levothyroxin (INN)
 - T4

6 beware overdose

- polyuria
- polydipsia
- nervousness
- panting
- tachycardia
- voracious appetite

7

8 thyroid hormones

- dietary iodine important
- 4x as much T4 as T3 produced
- most T4 converted to T3 in cells
- binds to nuclear receptors
- increases protein synthesis

9 actions

- metabolism
 - increased metabolism in most cells
 - modulates other hormones, eg insulin
 - upregulates β receptors
- growth and development
 - direct effect on cells
 - potentiates GH & parathormone

10 hypothyroidism

- dogs
 - primary
- cats
 - rare
 - iatrogenic
 - secondary

11 drugs

- thyroxin
 - T4
 - levothyroxin (INN)
 - Eltroxin
- tri-iodothyronine
 - T3
 - liothyronine (INN)
 - Tertroxin

12 thyroxin

- cheap
- converted to T3
- use low dose and work up
- monitor progress

13 kinetics

- highly protein bound

- half life 12 hr in dogs
- cleared faster with enzyme inducers

14 liothyronine

- short half life – 6 hr
- rapid effect
- only used when T4 does not work
 - (suppression test in cats)

15 progress on T4

- week 1
 - more active and alert
- week 2
 - neurological signs improved
- week 4
 - hair starting to regrow
- variable
 - weight loss

16 therapeutic monitoring

- if no response in 2 months
- blood sample before dosing & after 6 hours

17 hypothyroidism

- brassica poisoning
 - cattle and sheep
 - vinylthioxazolidine
- produces goitre in longer term

18 9 yr old cat

- losing weight despite eating more
- restless
- looks rough

19 examination

- heart rate 240
- small kidneys
- nodules in neck

20 diagnosis

- hyperthyroidism

21 treatment

- surgery
- antithyroid drugs
- radioactive iodine

22 surgery

- β blockers
- iodine premed
- calcium post op
- may make renal failure worse
- commonest in practice

23 antithyroid drugs

- carbimazole
- (methimazole)
- (propylthiouracil)

24

25 side effects

- vomiting
- anorexia
- lethargy
- leucopaenia
- thrombocytopaenia & bleeding

26 radioactive iodine

- ^{131}I
- β 0.6Mev

- γ 0.08Mev
- half life 8 days

27 radioactive iodine

- advantages
 - single iv injection (also sc or po)
 - relatively safe and specific
 - 85 – 90% cure
- disadvantages
 - isolation for 3 weeks
 - potential danger to people
 - lots of red tape

28 thyroid


- dogs – hyothyroid
 - give thyroxin
- cats – hyperthyroid
 - surgery
 - carbimazole
 - radioactive iodine


29 diabetes mellitus


- type 1
 - insulin dependent
 - dogs & cats
- type 2
 - non insulin dependent
 - horses


30 diabetes

- low insulin
- high blood glucose
 - osmotic diuresis
 - polyuria / polydipsia

- ketone production
- 31  treatment
- type 1
 - insulin
 - type 2
 - oral hyoglycaemics ± insulin
 - both
 - diet

- 32  insulin
- polypeptide 6kDa
 - species differences
 - human recombinant
 - Caninsulin is from pigs
 - rapidly broken down

- 33  insulin
- very fast action
 - lyspro / aspart
 - fast action
 - soluble
 - medium action
 - isophane
 - amorphous insulin zinc suspension
 - slow action
 - crystalline insulin zinc suspension
 - glargine

- 34  fast acting
- soluble
 - acetate buffered solution
 - can be given iv
 - onset immediate

- lasts up to 2 hr

35 medium acting

- isophane
 - complexed with protamine
- amorphous insulin zinc
 - small crystals with zinc chloride
 - given sc
 - onset 1 – 2 hr
 - lasts 12 – 24 hr

36 long acting

- crystalline insulin zinc
- insulin glargine
 - given sc
 - onset 2 – 8 hr
 - duration 24 hr
 - used in cats

37 side effects

- hypoglycaemia
 - give glucose iv
- rebound hyperglycaemia
 - Somogyi effect
 - reflex response to hypoglycaemia

38 oral hypoglycaemics

- type 2 diabetes
- cats
- many new human drugs
 - glipizide
 - (tolbutamide)
 - (metformin)

39 diabetic coma

- soluble insulin iv
- intensive care
 - acidosis
 - dehydration
 - heart
 - lungs

40 diabetes in dogs

- sort out diet
- insulin
- measure blood glucose
- hospitalise until stable
- monitor urine glucose

41 diabetes in cats

- sort out diet
- oral hypoglycaemics
- insulin
- measure blood glucose etc

42 diabetes

- dogs – type 1
 - give insulin
- cats type 2 / 1
 - insulin
 - oral hypoglycaemics