- 1
- 2 Steroids
 - * VETERINARY STEROIDAL DRUGS:
 - GLUCOCORTICOIDS
 - *** SEX HORMONES**
 - ANAESTHETICS
 - ANABOLIC STEROIDS
- 3 💷
- 4 💷
- 5 Glucocorticoids
- 6 🔳
- 7 Glucocorticoid Effects
 - Energy Metabolism
 - insulin antagonism
 - gluconeogenesis
 - lipolysis
 - protein catabolism
- 8 Glucocorticoid Effects
 - HAEMATOLOGICAL EFFECTS:
 - INCREASED PLASMA:
 - PCV and RBC lifespan
 - neutrophils
 - glucose
 - urea nitrogen
 - cholesterol
 - clotting time
- 9 Glucocorticoid Effects
 - HAEMATOLOGICAL EFFECTS:
 - Decreased plasma
 - lymphocytes

- eosinophils
- basophils
- Decreased extravascular margination
- Depress serum thyroxine?

10 Glucocorticoid Effects

- Water and Electrolytes -
 - ↓ calcium absorption (gut)
 - ↓ calcium absorption (bone)
 - ↑ calcium excretion (kidney)
 - polydipsia
 - polyuria
 - ↑ GFR

11 <a> Glucocorticoid Effects

- IMMUNOLOGICAL EFFECTS
 - numerous
 - use extreme care with infectious
 - disease –

12 <a> Glucocorticoid Effects

- CARDIORESPIRATORY SYSTEM
 - Chronotropic
 - Inotropic
 - Catecholamines
 - † Beta adrenoreceptors

13 Glucocorticoid Effects

- CENTRAL NERVOUS SYSTEM
 - Mental dependency
 - Euphoria
 - Hunger
 - Depression
 - ↓ pyrexia

14 <a> Glucocorticoid Effects

- SKIN -
 - Increased calcification
 - Thinning and weakening of connective

tissue

15 Glucocorticoid Effects

- MUSCULOSKELETAL SYSTEM
 - ↓ osteoclast activity
 - ↓ growth
 - Depletion of cartilage matrix
 - Osteoporosis

16 Glucocorticoid Effects

- MUSCULOSKELETAL SYSTEM
 - Muscular weakness
 - Muscle atrophy –

17 Glucocorticoid Effects

- REPRODUCTIVE EFFECTS
 - Foetal maturation
 - Teratogenic -
 - Induce abortion
 - Induce parturition –
 - Inhibit spermatogenesis
 - Inhibit ovulation

18 Glucocorticoid Effects

- GASTROINTESTINAL EFFECTS
- .
- Ulcerations
- Fatty liver
- Pancreatitis
- Liver enzymes 1 eg serum ALT

19 Anti-inflammatory Effects

- Lipocortin
 - inhibits phospholipase A -
- Inhibit COX2 synthesis
- Lysosomal membrane stability

20 Anti-inflammatory Effects

- CELLULAR EFFECTS:
 - Inhibition of leukocytes
 - Inhibition of inflammatory mediators
 - Interfere with catabolic enzymes
 - Suppress granulation tissue production –

21 Immunosuppressive Effects

- Dose related effect
- Duration of activity related effect
 - short to medium acting
 - long acting

22 Hypothalmic-Pituitary-Adrenal Axis (HPA)

- Negative Feedback
- 23 Corticosteroids
 - * CLINICAL USES:
 - ALLERGIES
 - INFLAMMATION
 - IMMUNOSUPPRESSION
 - PARTURITION INDUCTION
 - **ENDOCRINE FUNCTION TESTS**
 - THERAPY FOR ADDISON'S DISEASE
 - TRAUMA/SHOCK THERAPY
- 24 🔳
- 25 💷

- 26 🔳
- 27 ALLERGY MANAGEMENT
 - Flea allergy
 - Contact allergy
 - Atopic conditions
 - Inflammatory bowel disease

28 TRAUMA ASSOCIATED INFLAMMATION

- Cerebral
- Spinal
- Ligamentous
- Capsular
- Synovial
- Muscular
- 29 🔳
- 30 <a> Glucocorticoid

Anti-inflammatory Potencies

- * Cortisol = 1
- Prednisone = 4
- * Dexamethasone = 25
- 31 Glucocorticoid

Duration of Activity

- * SHORT ACTING:
 - cortisone, hydrocortisone
 - Prednisone, prednisolone
- * INTERMEDIATE ACTING:
 - methylprednisone, triamcinolone
- * LONG ACTING:
 - dexamethasone
 - Betamethasone

- 32 🔳
- 33 🔳

34 STRUCTURE-ACTIVITY RELATIONSHIPS

- BASE (relatively insoluble salts/esters)
 - short
 - intermediate
 - long acting
- * BASE-COMPOUND (succinate, phosphate)
 - Increased solubility
- * FORMULATION (topical, suspensions, tab)
 - physical characteristics
- 35 BASE (relatively insoluble salts/esters)
- 36 BASE-COMPOUND (succinate, phosphate) Increased solubility
- 37 STRUCTURE-ACTIVITY RELATIONSHIPS
 - * BASE-COMPOUND (phosphate and phenylproprionate)
 - Increased duration of action
 - Up to 8 days?

38 TORMULATION (topical, suspensions, tab) physical characteristics

39 PHARMACOKINETICS

- ABSORPTION
- * FORMULATION & ROUTE DEPENDENT
 - aqueous (IV, SQ, IM)
 - intermediate absorption
 - polyethylene glycol
 - long acting/depot
 - poor solubility in water

40 PHARMACOKINETICS

- DISTRIBUTION
- * DEPENDENT ON CORTICOSTEROID
 - bound to proteins
 - transcortin
 - albumin
 - widely distributed

41 PHARMACOKINETICS

- METABOLISM
 - Plasma/fluids hydrolyse most
 - Hepatic metabolism of prednisone
- ELIMINATION
 - Urinary excretion

42 SELECTION OF CORTICOSTEROIDS

- COST
- * ROUTE OF ADMINISTRATION

- ONSET OF EFFECTS
- DURATION OF EFFECTS
- MINERALOCORTICOID EFFECTS
- ANTI-INFLAMMATORY POTENCY
- HPA AXIS EFFECTS

43 CONTRA-INDICATIONS

- DIABETES MELLITUS
- CATABOLIC DISEASE
- INFECTIONS
- VIRAL INFECTIONS-CORNEAL ULCERS
- YOUNG ANIMALS
- PREGNANCY
- * SURGERY

44 DRUG INTERACTIONS

- MICROSOME INDUCTION
- DEPLETION of POTASSIUM (diuretics)
- INCREASE DRUG TOXICITY (digitalis)
- * INSULIN ANTAGONISM
- * DECREASE METABOLISM (cyclophosphamide)
- INHIBITS ACTIVATION (erythromycin)
- GASTRIC ULCERATION (NSAIDs)

45 ADVERSE EFFECTS

- * STRESS LEUKOGRAM
- HEPATIC enzymes increase
- Serum THYROXINE depressed
- * PU/PD/POLYPHAGIA
- CLEFT PALATE
- * ABORTION (C16 modified)
- PEPTIC AND GASTRIC ULCERATION

46 ADVERSE EFFECTS OF LONG TERM THERAPY

- Infection
- Myopathy
- Behavioural Changes
- Osteoporosis
- Poor Growth
- Calcinosis Cutis
- Hyperpigmentation and Thin Skin
- Collagen Diseases
- * Dogs are generally more sensitive than cats

47 GLUCOCORTICOID THERAPY

- Taper the dose!
- Wean the animal off slowly
 - the longer the course of therapy, the longer the weaning off period

48 Doses

- Anti-inflammatory doses
- Immunosuppressive doses
- Dose: dog vs cat
- Dexamethasone
 - cat about ½ dog dose (generally)
- Prednisone/prednisolone
 - cat twice the dog dose (generally)

49 MINERALOCORTICOID EFFECTS

- * ADRENAL CORTICAL INSUFFICIENCY
- * DOCP desoxycorticosterone (injectable)
- FLUDROCORTISONE (oral use)
 - Increased extracellular fluid
 - Sodium retention
 - Potassium and hydrogen ion loss

• Increased glomerular filtration rate

50 🔳 Cushing's Syndrome

- IATROGENIC
 - Excessive use of glucocorticoids
- PITUITARY
 - Excessive production of ACTH
- ADRENAL
 - Tumours or hyperplasia

51 🔳 Cushing's Syndrome

- TREATMENT
 - MITOTANE
 - * Cytotoxic Effects On Z. Fasiculata and Reticularis
 - SELGELINE
 - MONOAMINE OXIDASE B INHIBITOR

52 Glucocorticoid Effects

- SUMMARY (need to know about)
 - USES
 - POTENCY AND DURATION
 - SIDE EFFECTS
 - CONTRAINDICATIONS
 - DOSES