

Cardiovascular System

1

1

cardiovascular system

- heart
- blood vessels
- blood

2

2

factors which can be changed

- heart
 - rate
 - force
- blood vessels
 - tone
- blood
 - volume
 - composition

3

3

common problems

- heart disease
- injury
- anaesthesia
- shock

4

4

heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**

5

5

heart

- **conducting system**
 - antiarrhythmics
 - chronotropes
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**

6

6

heart

- **conducting system**
- **myocardium**
 - inotropes
- **blood supply**
- **valves**
- **nerve supply**

7

7

heart

- **conducting system**
- **myocardium**
- **blood supply**
 - vasodilators
- **valves**
- **nerve supply**

8

8

heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
 - vasodilators
 - (surgery)
- **nerve supply**

9

heart

- **conducting system**
- **myocardium**
- **blood supply**
- **valves**
- **nerve supply**
 - chronotropes

10

10

consequences of HF

- **upstream pressure increases**
 - increased preload
- **downstream pressure goes down**
 - vasoconstriction
 - increased afterload

11

11

consequences of HF

- **blood dams back in lungs**
 - pulmonary oedema
- **blood dams back in body**
 - ascites & peripheral oedema
- **lack of forward flow to muscles and lungs**
 - tissue hypoxia

12

heart failure

- cardiac arrest
- acute heart failure
- chronic (congestive) heart failure

13

cardiac arrest

- prevention is better than cure!
- treat the causes before it happens!

14

What would you do?

- 7 year old fluffy dog
- not breathing
- no palpable pulse

15

cardiac arrest

- Airway
- Breathing
- Circulation
- Drugs
- ECG etc

16

drugs

- **asystole**
 - atropine
 - adrenaline
 - bicarbonate

17

drugs

- **ventricular fibrillation**

18

drugs

- **ventricular fibrillation**
 - DC defibrillation

19



20

drugs

- **ventricular fibrillation**
 - DC defibrillation
 - (lignocaine)
 - adrenaline
 - bicarbonate

21

problems after CPR

- hypoxic myocardium & brain
- acidosis
- bruising of myocardium
- lung contusions / pneumothorax
- broken ribs

22

22

acute heart failure

- after CPR
- anaesthetic overdose
- pericarditis
- metabolic illness
- progressive CHF

23

severe acute heart failure treatment priorities

- 1 avoid excitement
sedate if necessary
benzodiazepine ± opioid
- 2 give oxygen
oxygen cage
mask
nasal tube
- 3 place large bore iv catheter
sedate if necessary
benzodiazepine ± opioid
cut down if necessary
local anaesthetic
- 4 give furosemide iv
1-2 up to 8 in dog/mg/kg/hr
- 5 attach ECG machine
- 6 make diagnosis
x rays, ultrasound, etc
- 7 drugs
vasodilators
inotropes
antiarrhythmics
fluids

24

cardiac arrest

- **Airway**
- **Breathing**
- **Circulation**
- **persist for 15 mins**
- **if resuscitation successful, treat for acute heart failure**

25