KEY LEARNING OBJECTIVES

- Look at some of the more common endocrine disorders
- Discuss how to perform a preoperative assessment in patients with an endocrine disorder
- Discuss some of the potential complications associated with the more common endocrine disorders seen in practice

MULTIPLE CHOICE QUESTIONS

1. What is the name of the response of the endocrine system following a noxious stimulus?
 - (A) Reflex response
 - (B) Stress response
 - (C) High output response
 - (D) Endocrine reflex response

2. During anaesthesia how often should blood glucose be monitored in a patient with diabetes mellitus?
 - (A) Every 4–6 hours
 - (B) Pre- and postoperatively
 - (C) Every 15 minutes
 - (D) Every 30–60 minutes
3. Patients with hyperadrenocorticism (Cushings) often experience abdominal enlargement. Why is this a concern during anaesthesia?
 - (A) The weight of the abdomen can compromise respiratory function
 - (B) The weight of the abdomen can compromise blood flow in the vena cava
 - (C) Both a and b
 - (D) A large abdomen will increase anaesthetic requirement

The Caesarean section

Claire Roberts

Anaesthesia for a patient undergoing a Caesarean section should not need to be stressful and hurried. With a well thought-out protocol in place and the use of check-lists, the team should be prepared for this type of surgical presentation at any time. Our goal is to keep the mother safe whilst saving the puppies or kittens.

Patient status will vary greatly, depending on how quick the owner has been at identifying a problem. Patients may present dehydrated, exhausted, hypotensive, hypothermic and/or hypocalcaemic. Clinical and biochemical abnormalities need to be addressed quickly before proceeding to induction of anaesthesia and surgery, any acid–base imbalances and/or hypotension should be addressed before surgery and continued postoperatively for as long as required.

There are many considerations that need to be addressed prior to induction of anaesthesia. Fluid therapy and temperature control should be actively implemented as soon as the patient arrives. Drug selection can be challenging as placental transfer occurs with every anaesthetic drug commonly used, which means puppies and kittens will be born affected by these drugs. For this reason, we need to select drugs that are short acting or reversible, using the lowest effective dose possible.

When selecting an analgesia protocol for these patients we should be aware of the drugs' impact on maternal and/or neonatal survival and decide what route, drug and at what stage of the procedure we are going to administer them.

The dam or queen is likely to experience a range of complications associated with being pregnant. Her distended abdomen pushing on her diaphragm will result in hypoventilation, she will have a higher oxygen requirement causing her to hyperventilate and in the

event of blood loss these patients are at risk of becoming hypotensive, showing a slower response to blood loss. A delay in gastric emptying increases the risk of regurgitation which will also require careful management during the induction phase until an endotracheal tube is placed.

KEY LEARNING OBJECTIVES

- Induction and maintenance of anaesthesia for a Caesarean section
- Analgesia options for a Caesarean section
- Postoperative anaesthesia considerations

MULTIPLE CHOICE QUESTIONS

1. Which of the following should be avoided when selecting an anaesthetic protocol for a Caesarean section?
 - (A) Choosing drugs with a short duration of action
 - (B) Using the lowest possible dose of injectable or inhaled anaesthetic agents
 - (C) Including an alpha-2 agonist in the premedication
 - (D) Use of local anaesthetic techniques where possible
2. These patients tend to experience a delay in gastric emptying with an increased risk of regurgitation and aspiration. Which of the following can help minimise this risk?
 - (A) Keep patient in lateral recumbency during intubation
 - (B) Avoid inflating the endotracheal tube cuff
 - (C) Rapid induction
 - (D) Pre-oxygenating prior to induction

Anaesthesia of...

3. Why is there a greater risk of anaesthetic overdose in these patients?
- (A) A patient's MAC requirement is higher when pregnant

- (B) Anaesthetic requirement is reduced by 25–40% in the pregnant patient
- (C) These patients require a higher oxygen flow rate
- (D) Premedication is not recommended

The emergency patient

Trish Farry

The emergency patient presented for anaesthesia will require a thorough clinical assessment for the anaesthetist to gain an understanding of the physiological status of the patient. An emergency patient will have an altered physiological state and decreased reserves that may affect the normal responses to drugs administered or procedures performed.

If possible, the patient should be stabilised prior to anaesthesia. Electrolyte abnormalities, dehydration or hypovolaemia in emergency patients will benefit from stabilisation prior to induction of anaesthesia. Further diagnostics, if indicated, will also benefit the patient (e.g. imaging or haematological examination). The patient may need to be administered drugs to facilitate diagnostics prior to anaesthesia. The choice of drugs for chemical restraint will depend upon the condition of the patient. Opioids are commonly used due to their minimal effect on cardiac output, blood pressure and oxygen delivery.

The emergency patient may often present with altered mentation, and induction should be performed using drugs that will cause the least dramatic variations of the patient's physiological state. Titration should always be maximised (unless rapid airway control is necessary), and the combination of multiple drug classes will help minimise the side effects from the use of a single drug. The use of regional anaesthesia will also be of benefit (time permitting), and may substantially decrease the inhalational or injectable agents required, thus minimising the side effects.

Maintenance under anaesthesia of any patient (and especially the emergency patient) requires extreme vigilance and preparedness of the anaesthetist. Appropriate monitoring techniques should be used, abnormalities quickly identified and treatment instigated. The emergency patient has a much less stable physiological state and therefore is not as able to compensate for alterations as would a healthy patient. Hypotension should be addressed promptly to maintain appropriate organ perfusion. The anaesthetist may need to use a variety of methods (depending on the patient) to address hypotension. Crystalloids, colloids and inotropic support may be used.

In the critical emergency patient, more than one agent may often be required for pressure support (i.e. noradrenaline or vasopressin in combination with dopamine or dobutamine).

Monitoring and vigilance do not stop after the anaesthesia. Having the emergency patient survive the anaesthetic and the procedure may be rewarding, but the aftercare of the patient is of critical importance. To improve survivability, the patient will require close monitoring post anaesthesia and supportive procedures may continue from several hours to days post anaesthesia.

KEY LEARNING OBJECTIVES

- A thorough patient assessment should be performed prior to development of an anaesthesia plan. Where possible, patients should be stabilised prior to anaesthesia to minimise complications
- Use of multimodal and balanced anaesthesia and analgesia techniques will assist with physiological stability
- Successful outcomes can be dependent upon preparation of the anaesthetist, anticipation of potential problems and postanaesthesia care

MULTIPLE CHOICE QUESTIONS

1. Generally, what would an appropriate treatment therapy for hypotension under anaesthesia begin with?
(A) Increase inhalant, decrease analgesia
(B) Decrease inhalant, increase analgesia
(C) Increase inhalant, increase analgesia
(D) Decrease inhalant, decrease analgesia
2. Which class of drugs is commonly used in anaesthesia due to minimal effect on cardiac output, blood pressure and oxygen delivery?
(A) Phenothiazines
(B) Opioids
(C) Anticholinergics
(D) Butyrophenones
3. To maintain appropriate organ perfusion, what should mean arterial pressure (MAP) be?
(A) <60 mmHg
(B) <40 mmHg
(C) >60 mmHg
(D) >40 mmHg

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