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Veterinary Specialists

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Is it all needles, pills and potions?

Veterinary acupuncture and pain management.

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Introduction


- What is pain?
- What happens in the body.
- How we assess pain.
- Acupuncture.





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What is pain?




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What is pain?

- Pain is.....
 - Unpleasant?
 - Due to physical harm?
 - Emotional?
 - Subjective?
 - **Individual!**
- “... an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” *IASP, 2006.*







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Types of pain


Short-lasting




Chronic



Acute





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Different 'types' of pain

• Nociceptive pain:

- Can be described as 'normal' pain, protective, physiological and protective.
- First and second pain.
- Visceral or somatic.
- Can lead to the development of chronic pain if managed inappropriately.

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Different types of pain

• Inflammatory pain:

- In response to actual tissue damage.

• Neuropathic pain:

- Due to damage to the nervous system.
- Nociceptors aren't involved.
- Serves no useful purpose.
- Difficult to diagnose and confirm in veterinary species.

• Functional pain:

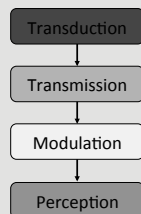
- A type of neuropathic pain where there is no physical cause.
- Not documented in animals yet.

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Transmission of pain

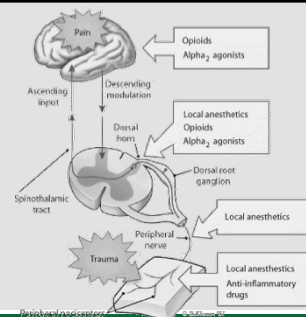
- Complex sensory pathway starting from stimulus and ending with cognitive perception.

• Can be simplified into four stages:



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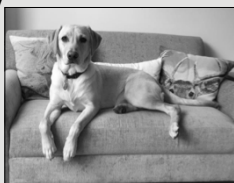
Where do analgesic drugs fit in?



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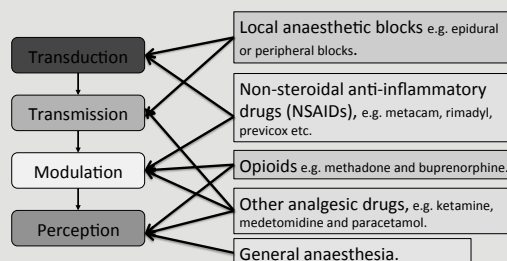
Example

- Undergoing TPLO surgery due to a ruptured cranial cruciate ligament.
- What type of pain is involved?
 - Acute nociceptive pain.
 - Inflammatory pain.



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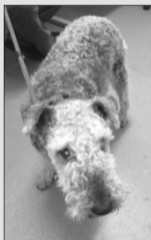
How can we block pain?



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Daisy, 8y FN Airedale

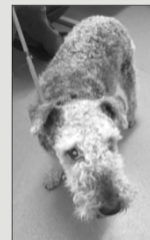
- Chronic bilateral cruciate disease and OA.
- Lumbar spinal pain.
- IBD and colitis controlled with steroids.
- Insulin-dependent diabetic with bilateral cataracts.
- GRUMPY!



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Daisy, 8y FN Airedale

- What type of pain?
 - Inflammatory?
 - Acute vs. chronic?
 - Neuropathic?
- How do we assess her pain?



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Daisy, 8y FN Airedale

- Pain management:
 - Prednisolone (steroid).
 - Paracetamol.
 - Hydrotherapy and physiotherapy.
 - Acupuncture.



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Assessing pain

- Fundamental part of pain management.
- Human pain 'experience' is split into three parts;
 - Sensory-discriminative,
 - Affective-motivational,
 - Cognitive-evaluative.
- Can be difficult to accurately assess pain in animals.

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Assessing acute pain

Objective	Subjective
Physiological indicators of pain? <ul style="list-style-type: none"> • Heart rate, respiration rate, blood pressure, pupil size, plasma cortisol, beta-endorphin levels • Measurement of thermal, mechanical pain thresholds 	One dimensional : <ul style="list-style-type: none"> • Simple descriptive scales (SDS) • Verbal rating or ordinal scales (VRS) • Numerical rating scales (NRS) • Visual analogue scales (VAS)
<ul style="list-style-type: none"> • Objective behavioural assessment 	Multidimensional pain scales: <ul style="list-style-type: none"> • University of Melbourne Pain Scale • Glasgow Composite Pain Score

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Assessing chronic pain

- Very difficult in humans and animals.
- Relies heavily on input from owners!
- Questionnaire-based assessment:
 - GUV-Quest (www.vetmetrica.com).
 - Helsinki Chronic Pain Index.
 - Canine Brief Pain Inventory.

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Veterinary Acupuncture

- What is acupuncture?
- How does acupuncture work?
- When and how can we use acupuncture?



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What is acupuncture?

- Adjunctive therapy traditionally used in people in the management of multiple conditions, including pain.
 - Growing popularity in veterinary species.
- Originated in China?
- Otzi (3300 BC) – Alpine Iceman



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What is acupuncture?

“Insertion of a solid needle into a the body for the purpose of therapy, disease prevention and/or the maintenance of health”

- Acupuncture is not:
 - Moxibustion
 - Gold bead implantation
 - Laser acupuncture
 - Acupressure



- **An Act of Veterinary Surgery.**

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What is acupuncture?

- **Adjunctive therapy for pain management.**
- Traditional Chinese/Eastern Approach:
 - Alterations in the flow of 'Qi' (pronounced chi) along body meridians.
 - Traditional acupuncture points

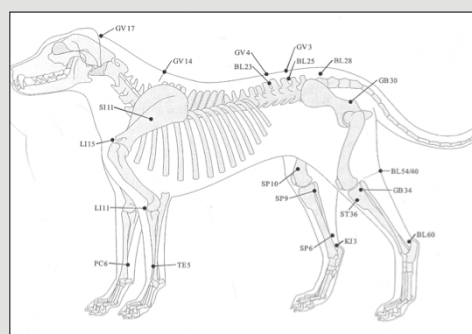


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What is acupuncture?

- **Adjunctive therapy for pain management.**
- Western Approach:
 - Adapted Traditional approach using current knowledge of anatomy, physiology, pathology and evidence-based medicine.
 - Based on neurophysiological principles.
 - Incorporates traditional acupuncture points.

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How does acupuncture work?

- Specific effects are mediated through the stimulation of the peripheral nervous system and subsequent neuromodulation within the CNS.
- Effects can be;
 - Local
 - Segmental
 - Heterosegmental
 - Generalized.
 - Analgesic
 - Non-analgesic



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How does acupuncture work?

- **Local effects**
 - Afferent nerve stimulation
 - Vasodilation
 - Nerve growth?
 - Blood vessel proliferation?
- **Generalized effects**
 - Limbic system deactivation
 - Endorphin release
 - ACTH and oxytocin release
- **Segmental effects**
 - Pain modulation
- **Heterosegmental effects**
 - Enhanced descending inhibition

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Can I use acupuncture?

YES:

- Osteoarthritis
- Chronic pain states
- Neuropathic pain
- Disc-related pain
- Wound healing?
- Atopy?

NO:

- Immunocompromised patients.
- Bleeding disorders.
- Overlying skin infections.
- Pregnant animals.
- Risk of entering the thorax/abdomen.

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Where do I put my needle?

- Western approach:
 - Myofascial trigger points
 - In muscles near tender points
 - In muscles innervated by the same neurological segment.
 - Traditional acupuncture points – local and generalized effect.

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Treatment

- Dry needling or electroacupuncture (EAP)
- 20-30 minutes per session.
 - CCK-8 release after >45 minutes.
- Weekly sessions for 4-6 weeks, then increase the interval depending on the individual.
- Not all animals respond positively to acupuncture.

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Side effects and complications

- Mild adverse effects in 10% patients.
 - e.g. tiredness, local pain, temporary exacerbation of symptoms
- Moderate adverse effects in 0.13% patients
 - e.g. fainting, severe exacerbation of symptoms
- Serious adverse events in 0.024% patients.
 - E.g. pneumothorax, bacterial endocarditis (auricular AP), cardiac tamponade
- No reports in animals.....

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Evidence?

- Post-operative pain in hemilaminectomy patients;
 - Reduced post-operative opioid requirement (*Laim et al, 2009*).
 - Improved function compared to control groups (*Hayashi et al, 2007*).
- Elbow OA;
 - No effect of EAP on ground reaction forces and pain scoring (VAS) in elbow OA in dogs but 8/9 blinded Owners able to identify period of AP (*Kapatkin 2006*).
- Humans – OA, neck pain, chronic lower back pain and nausea.

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In summary.

- Acupuncture is an adjunctive therapy that can be used in patients with chronic pain.
- The risk of side effects are low.
- Not all patients respond to acupuncture.



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Any questions?



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