

MEDICAL PROBLEMS CAUSING BEHAVIOURAL CHANGES IN THE DOG

1. INTRODUCTION

Animal behaviour is defined as an observable external activity. Behaviour problems have an impact on both the well-being of the animal and on society. They can be classified in a) normal behaviours that cause annoyance to the owner, b) behaviours that can injure or cause illness to the individual or to others, c) behaviours dangerous to the owner.

The pathologies included in this work have been chosen mainly for their frequency (pain, dermatological problems), scientific interest (hypothyroidism) and their difficulty in their eventual diagnosis (neurological problems).

3. ENDOCRINE PROBLEMS (HYPOTHYROIDISM)

The brain is one of the most affected organs by the thyroid hormones. The mechanism by which thyroid hormones influence behaviour is unknown, although they are known to modulate the activity of noradrenaline, serotonin and dopamine.

- Aggression
- Compulsive behaviors
- Fear/phobias
- Concern about new / strange situations
- Separation anxiety
- Hyperactivity

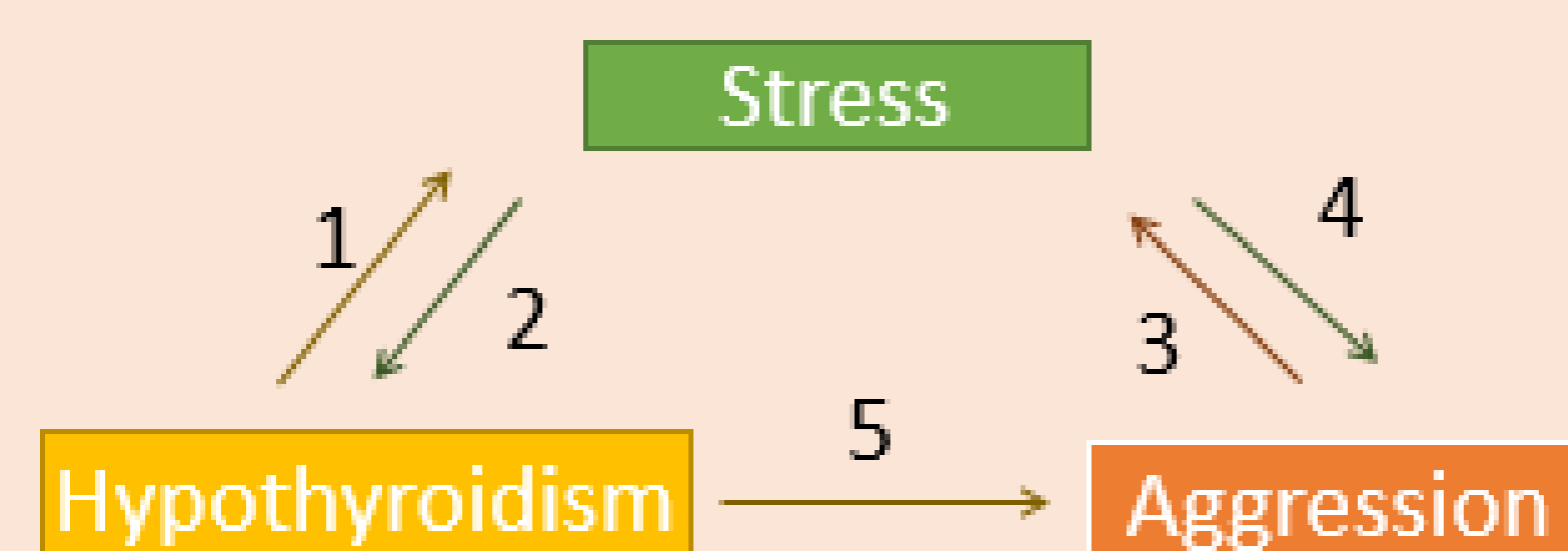


Figure 1. Relationship between hypothyroidism, stress and aggression.

1. Hypothyroidism decreases cortisol clearance. Persistent levels of glucocorticoids result in a state of stress.
2. Glucocorticoids inhibit TSH release and T4 to T3 conversion.
3. Aggressive behaviour increase cortisol concentration.
4. Stress reduces reactivity threshold
5. Hypothyroidism lowers serotonin levels, producing a state of hyper-irritability and aggression.

2. OBJECTIVES

- To list the medical conditions, related to behaviour changes, that are of interest due to their frequency, scientific repercussion or make diagnosis difficult.
- To list behaviour changes resulting from each pathology.
- To describe the mechanisms by which these pathologies influence behaviour.

Glossary: Central Nervous System (CNS), Levothyroxine (T4), triiodotyronine (T3), Thyrotropin (TSH)

4. PAIN

Pain is perceived at brain level when the information reaches the somatosensory cortex but there are also other structures involved such as the anterior cingulate cortex, the amygdala, and the prefrontal cortex, which is where the emotional component begins.

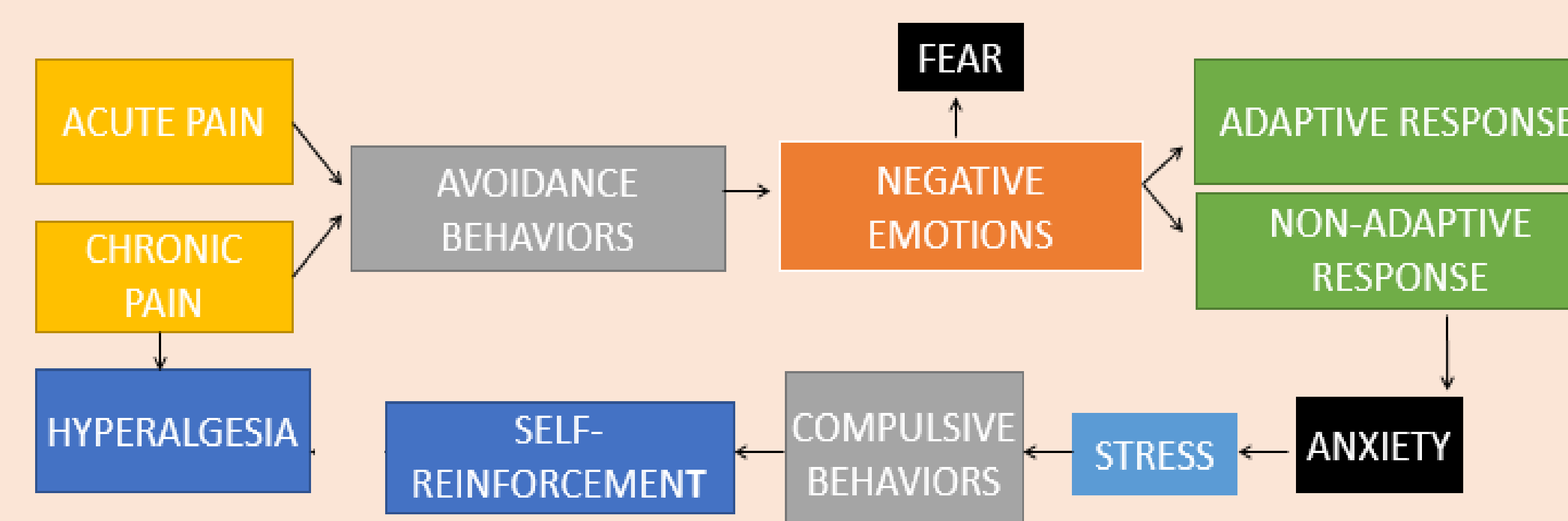


Figure 2. Relationship between pain and behaviour.

- Lost of normal behaviors (anorexia, ↓ of social and exploratory behaviors)
- Increase or acquisition of new behaviors (aggression, fear, compulsive behaviors)

6. DERMATOLOGICAL PROBLEMS

Pruritus

- The stimulus that gives rise to this sensation can be either dermatological, metabolic, endocrine, neurological or psychogenic. Stress can be the cause or aggravating factor of pruritus due to the neuropeptides distributed in the skin.

Atopic dermatitis

- It can reduce the ability to cope with problems and increase irritability, hostility, depression, anxiety and aggression.

Acral lick dermatitis

- It has been reported that 70% of dogs with these lesions are diagnosed with fear and anxiety problems, but there may be other causes such as the demand for attention, limited social interaction and compulsive behaviours, this licking being developed as a displacement behaviour.

7. CONCLUSIONS

- The behavioural alterations shown by an animal are often a reflection of the malfunction of its organs and systems.
- Thyroid hormones play a very important role in cases of canine aggressiveness.
- Pain almost always causes behavioural changes. The immediate emotion is fear, which can be beneficial or not, depending on the context.
- It is very important to note that there are CNS disorders that can alter behaviour, even if the neurological examination is normal.
- Stress plays a very important role in psychodermatological disorders, often requiring a dual, medical and ethological treatment.

5. NEUROLOGIC PROBLEMS

It is very important to include a neurological examination along with the ethological visit, but there are disorders in areas of the CNS that can show completely normal results.

Some tumours do not alter the neurological examination because they are areas that are not involved in sensory or motor processes, but are specialized in cognition, thought and perception. For this reason they are called "silent" areas.

INTRACTANIAL TRUMORS

- Aggression
- Compulsive behaviors
- Fear
- Changes in mental status

EPILEPSY

- Bark
- Pursuit of shadows
- Wandering aimlessly
- Vacuum gaze