C.A.B.T.S.G.

INTERNATIONAL VETERINARY BEHAVIOUR MEETING

DAY TWO

SESSION ONE

PHOBIAS AND AGGRESSION.

CHAIR:

ROGER MUGFORD.
Phobias In Dogs From Diagnosis To Treatment

G. Muller

112 rue du fbg de Roubaix 59800 Lille, France.
CNVSPA:GECAF 40 rue de Berri 75008 Paris, France.

Definition

A phobia is a state of fear or fright, amplified beyond the adaptive reaction and provoked by an identified stimulus within the normal environment. The phobic reaction is actually a pathologic reaction which must be distinguished from a simple fear reaction. The phobic pattern is pathologic because the reaction is amplified beyond the adaptive reaction and because the triggering stimulus belongs to the usual environment. It must be emphasised that it is a dynamic reaction rather than a state and that it is the primary response, over amplified, which is responsible for the pathological evolution. The first reaction involves the second and the second involves the third. This evolution is comparable to shock reaction where the amplitude of each reaction is exaggerated and leads to a more serious problem than the one it is trying to avoid.

In the definition it is necessary to distinguish three different patterns:

1. Ontogenic phobia which is a phobia resulting from inadequate conditions of development existing from youth. We will study the aetiology of these phobias in the following as an example.
2. Post traumatic phobias a phobia which results from a strong exposure in poor conditions (flight impossible) to a stimulus previously considered as acceptable.
3. Deprivation syndrome is a pathologic state which results from the absence of encountering (numerous) stimuli, during the development period. The first meeting leads then to a fear reaction and a phobia.

Aetiology:

The study of the aetiology of these disorders will lead to a better understanding and allows a classification in three stages.

According to Changeux, (1983) during development there exists a period characterized by the multiplicity of neuronal connections called redundant connections. Conditions of development and initial meeting experiences will select some connections. At the adult stage, only the selected connections will persist.

This theory is known as the «selective theory». In this theory, every stimulus which is not, during the critical period, recognized as a good or normal stimulus, will be recorded as being dangerous since it is an unknown stimulus.

It is then possible to describe the sensitization and habituation processes. Habituation is the behavioral process which begins with discovery and finishes with the calm acceptance of the stimulus. It is necessary that the first meeting occurs in good conditions and above all this includes the possibility of shying away and of flight. This possibility of flight is necessary to avoid fear reaction.

On the other hand, sensitization is the behavioral process which begins with discovery and finishes with a phobia of a stimulus and its surrounding environment. Development of this sensitization is the result of the initial meeting conditions, including the impossibility of flight. Fear then occurs and becomes definitely associated with the
stimulus. Perception of a stimulus depends above all on the idea associated with it. Everything thought to be dangerous will be considered as such. Reality does not exist unless we can perceived it.

These considerations lead us to cognition. We can call cognition all the thought processes and even all the feelings associated with the stimulus. For example: on seeing a bee some people will think about honey and flowers and summer, others will think about stings and the danger of anaphylactic shock. These different persons will not see the same phenomenon. For everybody, the cognition associated with unknown things and beings is «this is dangerous».

Evolution and pathogeny:
From discovery to phobia:
There are three possibilities in the relationship between an individual and a stimulus:
1. First of all the stimulus belongs to the normal environment and is regularly met by the young animal during the development period. The conditions of development are good and flight is possible during the meeting. The pre-existent fear will decrease and habituation will set in.
2. The stimulus is regularly met but flight is impossible. The stimulus becomes aversive even if it is not painful. The fear resulting from the conditions of the encounter is enough to make the stimulus aversive. Following encounters will permit the cognition to be developed and we will observe the sensitization. Progressively the stimuli surrounding the first stimulus will become aversive too, if the meetings are numerous.
3. The third possibility is: the stimulus is not met before the end of the critical period. It will then belong to the unknown and dangerous world. Automatically the first meeting will lead to fear which is the condition for setting off the phobic process. Everything will proceed as if a bad experience had previously occurred.

Possibility of flight seems the determining factor in the evolution of phobia. If it is impossible, fright develops into fear and leads to a painful memory, incompatible with habituation. This memory will be stronger and will take place sooner if the emotion associated with the first meeting is powerful. In fact, the first act of memory is the activation of the cells. This activation is under the control of beta receptors.

From sensitization to disorder
When a stimulus is classified as a dangerous stimulus, the individual can try not to meet it through a specific behaviour which is an avoidance behaviour. This specific attitude is initialised by the indicating stimuli. The animal can begin flight as soon as it notices these indicating stimuli.

The buffer zone
Buffer zone is the zone surrounding danger which allows the phobic animal to live without fear. This possibility is the best one. It leads to what is called a simple phobia.
We must notice that avoidance behaviour can consist of several different behaviours among which we have aggressive behaviour and the development of the hyper dependence.

Hyperaggressive behaviour will prevent the disturbed dog from meeting any live phobic stimulus. Threatening a human being or another dog, the phobic animal will provoke its escape and obtain its own tranquility. This behaviour will bring a positive reinforcement and aggressivity will rapidly become instrumental.

Avoidance behaviour can exist in the form of an abnormal dependence on another individual. The afflicted animal, when in close contact with a familiar figure will feel secure and will avoid being confronted alone with the phobic stimulus. As previously this behaviour will rapidly become instrumental and lead to what has been called hyperattachment which is, in fact, hyper-dependance.

These avoidance behaviours are often combined to form a general avoidance attitude which is, for the animal, the equivalent of what is called avoidance personality in human beings.

Who among us has never seen an aggressive dog hide under its master's chair?

**Differences in aetiopathogeny**

We have distinguished three different patterns: ontogenic, post traumatic phobias and deprivation syndrome. It is possible to consider that the development of these three is nearly the same. The aetiology is equivalent too, since we can consider the phobic reaction in post traumatic phobias is just the result of bad conditions at the first meeting. It can be noticed that most dogs that develop post traumatic phobias (80%) have a very low level of sensitive homeostasis and have developed in poor conditions.

**Insufficiency of the security zone**

Sometimes the phobogenic stimuli are numerous and the buffer zone becomes larger and larger. For the stabilisation of the afflicted dog, the buffer zone must be well defined and reliable. If sometimes, when it is calmly settled, the phobic stimulus can suddenly occur, it is necessary to add new stimuli to the list of dangers. If the dog is regularly stimulated to the point of phobic reaction, its security zone will naturally decrease. Progressively, the buffer zone will become so extensive as to cover all kinds of stimuli: for example, impossibility of meeting a live individual, impossibility of hearing a loud noise...

This process will lead to extensive phobia which can be considered as the second level of phobia.

**The theoretical third level**

If the safety zone becomes so wide as to cover all the environment, it becomes impossible for the animal to move. This theoretical level is the third level characterised by inhibition.

**Contributing factors**

It is of some interest to wonder if there exist, exclusive of development conditions, other factors which can be held responsible for phobias.

**Influence of the mother**
It is very difficult to answer the question: is there a genetic determination of certain phobias? It is obvious sometimes that the puppies' reactions towards certain stimuli are exactly the same as their mothers' but, it is more difficult to prove that this is of genetic origin. First we know that a great deal of learning results from modelling learning. Puppies react as they see their mother do. Secondly we know that sensitive life begins before birth, in the uterus. During the gestation period, puppies will feel and «swallow» their mother's feelings. They will probably learn to associate feelings with stimuli, very early. Maybe this previous experience will create a predisposition to this or to this kind of reaction...

However some phobias can be an advantage and can be considered as evolution of the species. There even exist some general phobias which are common to all highly developed animals such as fear of falling and fear of a precipice. Such phobias can exist without any previous experience and seem to be part of genetic inheritance. This extremely interesting discussion has remained at a theoretical level until now. It is more interesting to know what a breeder can do to avoid the development of phobias. It is now absolutely true that the conditions of development have an enormous influence. Puppies need to be faced with many sorts of stimuli including various animals, human beings, noises and stimuli specific to modern life. Breeding puppies under a glass dome is useless (viruses will circulate anyway) and counterproductive. Veterinarians must encourage rearing conditions providing exposure to a wide variety of stimuli.

Influence of the master

The master's role can be determining. many dogs are purchased before the end of the critical period. It is then necessary that the owner allows his dog to have positive experiences, carried out in open situations. Fears of all kinds, belonging to the master this time, will induce closed situations (being on a lead) and isolation. Young puppies, are often over protected and prevented from meeting people or animals, even other dogs, in order to avoid contamination. This fear will go on until all the innoculations are completed which also corresponds to the end of the development period. This mistaken attitude leads to numerous phobias which could have easily been avoided.

It can also occur that masters contribute to the build up of hyperaggressivity, reinforcing aggressive, autoprotective behaviour that their dogs develop in front of new stimuli, by stroking them. A dog that barks at a new stimulus does so in order to make it run away since it cannot flee itself. If the master tries to calm the dog down, by stroking it, he will reinforce this aggressive attitude.

This attitude will encourage hyper dependance too. In fact the dog will learn to feel appeased by the owner.

Sometimes the owner will influence the phobic evolution process, encouraging avoidance behaviour. Most people consider fear as a fixed trait of character. The impossibility of improving the situation and the obvious unpleasantness of the phobic reaction (vomiting, smells ...) will lead the master to adopt an avoidance behaviour too. Things proceed as if the master were the cognitive part of an individual whose right cerebral hemisphere was the dog.

Finally some owners like to have aggressive guard dogs. They sometimes (often) believe that if the dog meets people and learns to be friendly with everybody, it will not be able to be a good guard dog. These dogs will certainly become phobic dogs and develop hyper aggressivity.
Neurotransmitters.

Fear reaction is normal and physiological. This reaction is under adrenergic control. At the first level of phobia, the clinical study shows the adrenergic system to be the only one perturbed. Compared to a simple fear reaction, we just notice that the reaction is amplified. This is the reason why the phobic reaction at this first stage can be considered as a nearly normal reaction.

We consider that overstimulation of the adrenergic system and sensitisation lead to overactivation of the dopaminergic system. When the individual has been sensitised, the main characteristic of its behaviour is anticipation. This pattern is considered as being under dopaminergic control. Anticipation will lead to a generalisation of the phobic reaction. The second level of the phobic reaction can be said to be mainly under dopaminergic control.

Between the primary level and the generalisation of the phobia we find avoidance behaviour which is most often an instrumental behaviour reinforced by negative reward. Instrumentalisation is mainly under the control of the dopaminergic system but the initialisation of this behaviour is under control of the adrenergic system.

When the disorder increases, this generalisation leads to an extensive phobia and eventually to an extended phobia. In this final extreme level, the behaviour is characterised by the impossibility of leaving the buffer zone (which is now a restricted space surrounded by danger) and inhibition.

Clinical study

This long description of the pathogery allows us to describe three clinical levels of disorder. This distinction, more than only theoretical, will lead to different treatment and also different prognosis.

1/ Phobia first level: simple phobia

Phobia is simple if the trigger stimulus can be identified. This possibility must be considered as the main element for classification. If this identification is possible it is indeed possible for the dog to avoid the phobogenic stimulus easily and the buffer zone is very limited around the stimulus. The phobic reaction will be clearly identifiable within a limited period. The reaction will be mainly under control of the adrenergic system and shaking, mydriasis and emptying of the anal glands can be observed.

2/ Extensive phobia: second level

The main intent of the dog is to reach a safe zone. Stimuli which can set off the pathologic reaction are numerous. At the beginning it is possible to see a relationship between the phobogenic stimuli but rapidly the dog's world of danger becomes incomprehensible. The dog's attitude is characterised by two patterns, avoidance behaviour and hypervigilance. We saw previously that avoidance behaviour can be hyper-defensive aggressivity or hyper attachment to the master. This pathologic attachment can be intermittent and can concern different persons. It can be really difficult to distinguish this disorder at this level from intermittent anxiety which is characterized by hypervigilance and fear and irritative aggressions. In extensive phobias, the dog will have a zone of comfort somewhere. Anticipation (which is always associated with avoidance behaviour) is under control of the dopaminergic system. Hypervigilance is under control of both the adrenergic and the dopaminergic system.

Third theoretical level
When the buffer zone is no longer around the stimulus but is around the dog, the animal cannot move without anxiety. Anticipation is permanent and inhibition occurs. The dog cannot leave its basket or the arms of its owner.

The clinical aspect of phobias can change when the context changes. A good deal of dogs’ phobias are ignored by the owner since living conditions enable perfect avoidance. In human beings, some people build their whole life around the possibilities of avoidance. In dogs, thanks to their masters, it is possible to see subjects, who are in fact phobic but do not manifest their disorders since their life is organised around avoidance. In this case, the master helps to enact the avoidance behaviour since he is annoyed by the phobic reaction as well. We hear about dogs that never go out since they have a garden and they do not like to venture into the street as they are afraid.

Such habits can conceal disorders and we are sometimes faced with surprising new phobias which result from a change in living conditions (no more garden, noisier street...).


The context of life is a determining factor for the evolution and expression of phobic disorders.

**Diagnosis**

It is very useful to perform a complete diagnosis including the level of the phobia. This will enable us to use specific chemical therapy and it will help us give a precise prognosis. Very often the diagnosis will be performed with the descriptions of the owner and the practitioner must try to direct the description if he wants something precise and useful. The owner is very often upset with the disorder and is unable to describe what happens without emotion. The veterinary practitioner must help him answer three sets of three questions:

- Aetiological:
  - How long has the reaction been noticed?
  - How often does it occur?
  - What were the conditions of development during the critical period? Have there been any changes in living conditions?

- Level or stage
  - The practitioner should look for adrenergic, dopaminergic or serotonergic reactions.
  - Adrenergic reactions will be the emptying of anal glands, shaking.
  - Dopaminergic reaction will be an irritable colon, vomiting, anticipation, hyper vigilance.
  - Serotonergic reactions will be mainly inhibition and substitutive behaviour

- Prognosis
  - Are there numerous possibilities of avoidance?
  - Is there abnormal aggressivity, defensivity, secondary hyperaggressivity?
  - Is there any hyperattachment?

These questions will enable us to formulate a therapy and to establish a prognosis. The practitioner must bear in mind the concordance between his own motivation and the
master's wishes. Sometimes the owner simply requests an improvement and does not want to reach the same level of perfection as the veterinarian. It will then often prove very difficult to cure the dog under these conditions. For example a pet owner consults the practitioner for his dog that is no longer house trained since he has moved to a new home. The veterinarians will understand the dog has a car phobia and the new house has no garden, so the dog must come into contact with cars when it wants to relieve itself. The owner is not asking the veterinarian to cure the car phobia and is not ready to help the practitioner with this difficult therapy.

**Differential diagnosis**

It is normally simple to distinguish simple phobia from other disorders. Several patterns can be confused with the higher levels of these disorders:

1. In hierarchical disorders, dogs can present «pseudo-phobias» which are in fact a particular expression of hypervigilance.

2. At the onset of hypothyroidia disease certain behaviours are very similar to phobia.

3. Social pseudo-phobias are sometimes the fact of young dogs which have a pain somewhere and are afraid of being touched. These pains (such as hip dysplasia, otitis...) can lead to a true social phobia if not cured.

4. Chronic pain in old dogs can also mimic a phobia. Old dogs can really hate walks or games and show fear reactions.

**Treatment**

Chemotherapy

By classifying levels it will be very easy to perform chemical therapy.

At the first stage medication should block the adrenergic reaction. Beta blocking molecules are the best choice. For dogs, propranolol will do very well. It must be given at a large dose (10-15 mg/kg BID) seven times higher than for humans since elimination is quicker in dogs. This drug is effective about three hours after administration. Induction must be performed in a quiet place (receptor competition).

This molecule can be used even for one-off prescriptions, for the show ring or for specific occasions. It must be given three hours before the beginning of the exposure to the phobogenic stimulus.

Other anxiolytic drugs can be used. These molecules will improve the behaviour of the animal but, as it has been noticed in humans, these medications are unable to cure the disorders. The dog will be much better whilst under the effect of drug but will not be cured in any way when the prescription is stopped. These molecules must be considered as a prescription of convenience, beneficial if a proper behavioural therapy is carried out at the same time.

The effects of these anxiolytic drugs are comparable to avoidance behaviour which allows the evolution of the disorder to be checked but do not promote the cognitive process. The practitioner must be careful when using anxiolytic prescriptions since these medications can increase aggressivity. With these molecules a growling dog will become a dog that bites and a begging dog will become a dog that steals.

When we approach the second level of phobia, we know the dopaminergic system is more involved. We will have to moderate dopaminergic reactions but behavioural therapy requires an alert dog so it is impossible to use sedative neuroleptics. The danger of
increased aggressivity exists with these molecules too and we must take this into account. Antidepressant neuroleptics are the best family to use. Sulpirid (Dogmatil ND) will be very effective. At a dose of 500 mg/m³ this molecule will be antiproductive but if the dose is decreased, there will be a disinhibition which proves very useful with phobia. Of course the danger is aggressivity. This danger is less important with Tiaprid (belonging to the same family of neuroleptics). The antidepressant dose is around 50mg/m³.

Selegiline (Déprexyl ND, Selgian ND) is a true dopaminergic regulator. It can be used without danger of increased aggressivity and this easier medication will probably, for this reason alone, replace all the others, for a long time to come. It must be given at a dose of 1mg/kg if Déprexyl ND is used and 0.5 mg/kg if Selgian ND is used.

At the higher level, when inhibition is very noticeable, it is best to use clomipramine. This molecule is an antidepressant medication and inhibits the capture of serotonin and has an alpha adrenergic effect. The results are very satisfactory with this molecule and there is no danger of aggressive disinhibition. It will be very useful to reinitiate exploration patterns and to diminish reactivity. The effects appear about ten days after the first administration and a little tiredness persists throughout the period of prescription. The results, using clomipramine are comparable to those obtained with mianserine but with this molecule the danger of aggressivity is maximal and it is also more expensive.

In most cases medication must be modified as the disorder changes. The practitioner must maintain contact in order to modify his prescription when the clinical signs change. When cured, sporadic prescriptions of propranolol are often necessary throughout the rest of the animal's life.

**Behavioural therapy**

This is an essential element. In human psychotherapy, medication is very often useless but the results are obtained with behavioural therapy alone.

Immersion therapy must be avoided as it is in fact very often counterproductive. Desensitisation is an effective therapy but it must be modified to become more operative. Usually, this method consists of confronting the dog with the phobogenic stimulus but at a very low degree of intensity so that the dog is able to accept it calmly. This therapy must be very progressive. We know from human experiences that fear will firstly increase when the dog is exposed to the phobogenic stimulus and after about 15 minutes, it will reach its maximum. Subsequently, fear will decrease. If the dog is removed from the stimulus during the first increasing period, the reaction will be stronger the next time he meets the stimulus. If the dog is removed from this phobogenic stimulus during the decreasing period, the next meeting will be calmer. This modifies desensitization therapy then consists then of exposing the dog to an increasing intensity of stimulus until it shows the first level of fear and then to maintain this stimulation until it shows signs of decreasing fear. This therapy is really much quicker than previous methods of desensitization.

Counter-conditioning will be possible but the therapy is a little longer. It consists of associating two different stimuli so that the reaction associated with the stronger one becomes the response to the other. For example, we can make a dog play with a ball and when it is sufficiently excited it will not be able to react to a car of which he is usually afraid. Slowly, cars will be associated with playing with a ball and pleasure will obscure the fear (probably the cognition will be modified).
It is possible to use a teacher dog, (modelling dog). This dog must be an adult of at least four months of age. It must be a quiet but stable dog. Very often this modelling dog will become a support for the affected dog and hyper-attachment can occur.

A few pitfalls must be avoided. We have already mentioned the danger of disinhibition resulting from the use of certain drugs. Other problems can come from the owner. At the beginning the dogs' progress and the improvement is easy to see. As time goes by the master will forget how his dog used to be and will request even more improvement. It is wise to describe the initial situation and to put down the final goals in writing before embarking on therapy.

Prevention:

Most phobias result from bad development conditions. We must approach the breeders in order to improve these conditions.

References:
Muller, G. (1996) Hierarchy and anxiety, Congrès de l'ESVCE, Bruxelles