



DEALING WITH PERICARDIAL EFFUSION IN EMERGENCY

Page 21/ by Nestian Maria

MANAGEMENT OF TETANUS INFECTION IN DOGS

Page 10/ by Mathilde Breton

**ARMY DOGS!
K9 IN THE ARMY**

Page 5/ by Bryan Meguira

THE



CAMPUS
we could be heroes!

DID YOU KNOW THAT FEBRUARY IS DENTAL HEALTH MONTH FOR OUR PETS?

A good reason to take a closer look at your four-legged friend's smile

Interview with Dr. Jacqueline Mocanu by Mara-Catalina Busca & Miruna Beda

Similar to humans, cats and dogs require regular dental maintenance to avoid diseases and ensure a lifetime of strong teeth and, of course, charming smiles.

Unfortunately, dental problems are way more common than we think and a study pointed out that 98% of veterinarian doctors advise owners to clean their animals' teeth regularly and only 2% actually do that.

Poor dental care not only causes bad breath, but can even lead to losing molars and teeth. In extreme cases, bad dental hygiene can cause serious health issues, as the bacteria in the oral cavity could travel to the heart, kidney or liver and cause infection.

So we have to know how to recognize these kinds of problems!

CONTINUED TO PAGE 2



Symptoms of dental issues are:

-  *A persistent bad breath*
-  *Difficulty chewing*
-  *Teeth with abnormal mobility*
-  *Red or bleeding gums*
-  *Tartar build-up*
-  *Lethargy*
-  *Pus filled nasal discharge*
-  *Pus in the gumline*



So let's take a closer look at this subject with **Dr. Jacqueline Mocanu**, who is passionate in veterinary dentist at our beloved **University Emergency Hospital "Prof. Dr. Alin Birtoiu"** and Sef lucrari (senior lecturer) in Surgery Department FMVB

01 How often do you believe it necessary for owners to bring their pets for check-ups?

"Dental consultation is recommended to be done as soon as you buy your four-legged friend because breed peculiarities (teeth malposition in brachycephalic breeds with premature accumulation of tartar: English/French Bulldog, Pug, Carlin, Shih-Tzu) or persistence of baby teeth (Bichon, Yorkshire Terrier) require the advice of a specialist."

02 In what way are the check-ups between dogs and cats different and what advice would you give depending on the species?

"The assessment of animals oral cavity health, must be done no matter the species. Still, in canines, dental calculus bears much more dramatic aspects. Oral pathology in cats is usually correlated with *viral diseases*. Teeth brushing is more easily accepted by dogs, while cats prefer dental diets."

03 What are the most frequent complications that can result from poor dental hygiene?

"Lack of oral care, especially in small and toy dog breeds, in which the apparition of tartar correlated with dental malposition happens earlier than in other breeds, causes the progression of periodontal disease accompanied by important inflammatory and degenerative phenomena which will weigh heavily on the animal's general wellbeing, leading to cardiac, hepatic, gastric and renal affections."



Fig. 1 - 2nd to 3rd degree periodontitis; the plaque completely covers the dental surface, resulting in a gum reaction. Credit: USAMVB Emergency Hospital Surgery Department

04 And the most extreme complications?

"As mentioned above, advanced stages of periodontal disease have serious repercussions on the heart, kidneys and liver."



Fig. 2 - Advanced periodontitis; Gum congestion and edema aggravated by the tartar on the dental surface. Credit: USAMVB Emergency Hospital Surgery Department

05 What supplements would you recommend for proper hygiene?

"Dental tartar removal can be done only by professional ultrasonic scaling. Oral hygiene can be maintained through dental brushing using toothpaste, dental gels, solutions specifically made for cats and dogs, depending on the situation and gravity. "Dental" or "oral care" diets play an important role and they are adapted to the species and size of the animal."



Fig. 3 - 2nd to 3rd degree periodontitis affecting the premolars and molars. Credit: USAMVB Emergency Hospital Surgery Department

06 What can pet owners do at home to make sure their cat or dog has optimal dental care?

"Management of periodontal disease in dogs and cats is done by prophylaxis, that's why daily oral cavity washing and brushing is the most important means of prevention of tartar apparition and, consequently, of inflammation and degeneration caused by periodontitis. Brushing is recommended after periodic scaling when it comes to patients that haven't had this procedure done to them before. Recurrent use of diets to maintain oral health is also a good choice."

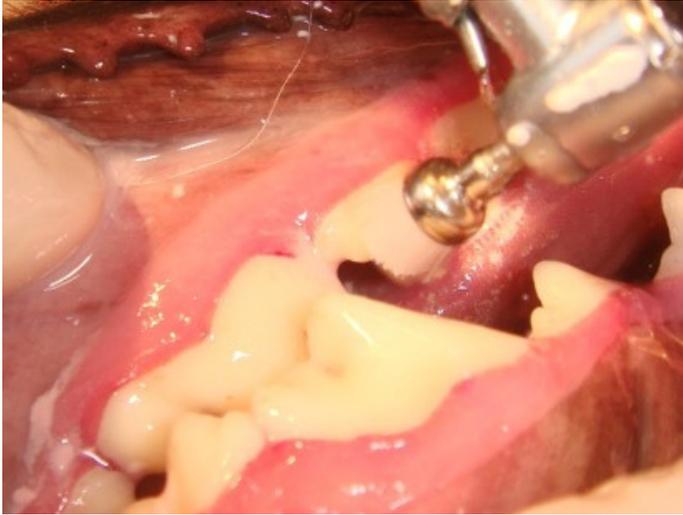


Fig. 4 - Previous case, photographed after professional scaling and brushing. Credit: USAMVB Emergency Hospital Surgery Department



Fig. 5 - Radiopaque area in upper left canine apex - Apical abscess. Credit: USAMVB Emergency Hospital Radiology Department

07 Thank you very much Professor Mocanu for the valuable information.

“You are very welcome. Thank you too for bringing this important topic in your newsletter. Besides, as an academician in the Faculty of Veterinary Medicine-Bucharest I can say that I really enjoy your newsletter. As veterinary medicine students and future veterinarian doctors you really doing good and each issue you are taking the level higher. So keep on pushing this. Well done The Campus. Well done...”

- Liquid supplements that can be added in their drinking water such as: Oxyfresh, Vet Aquadent
- Toothpaste - TropiClean Fresh Breath oral care Gel
- Chew sticks remove a lot of the plaque and tartar build-up
- Specific diets: Hills t/d Dental Care diet, Royal Canin Dental Dog, Royal Canin Mini Dental Care

“A lifetime of excellent dental health begins when our pets are very young. Even if they don’t have their permanent teeth yet, it’s important to start brushing them to help speed up the accustoming process for a future dental care routine. You want to make brushing a positive experience, so reward your pet with healthy treats after every home brushing session.”

THE CAMPUS

PUBLISHER

Ex Terra Aurum - USAMVB Bucarest

SCIENTIFIC COMMITTEE

- Dr. Emilia Ciobotaru
- Dr. Iuliana Ionascu
- Dr. Dan Cringanu
- Dr. Gheorghe V. Goran

GENERAL COORDINATOR

Dr. Seralp Uzun

CHIEF EDITOR

Vet.Med.Stu. Bryan Meguira

EDITORS

- Vet. Med. Stu. Claudia Schimenti
- Vet. Med. Stu. Mathilde Breton
- Vet. Med. Stu. Maria Nestian
- Vet. Med. Stu. Chloe Loir
- Vet. Med. Stu. Mara-Catalina Busca
- Vet. Med. Stu. Miruna Beda
- Vet. Med. Stu. Yann Daniel
- Vet. Med. Stu. Petre Ciprian Dragomir
- Vet. Med. Stu. Andrei Diaconescu

BOOK OF THE MONTH

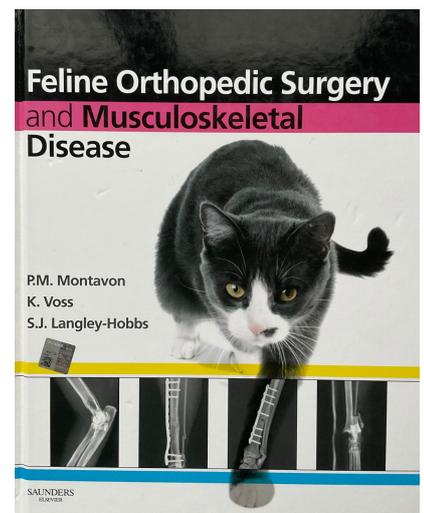
If you are passionate about orthopedics and plus if you are in love with cats, here is a special book “Feline Orthopedic Surgery and Musculoskeletal Disease”.

The book published in 2009 and pointed by authorities in veterinary medicine orthopedics as BIBLE OF FELINE ORTHOPEDIC SURGERIES.

Feline Orthopedic Surgery and Musculoskeletal Disease focuses on the treatment of feline orthopedics and traumatology and is written by a specialist team of experienced authors and contributors. It provides thorough color-coded coverage of investigation techniques, diagnosis and step-by-step illustrated descriptions of the surgical techniques.

Covers the basics of feline anesthesia, analgesia, preoperative and postoperative care of the patient, orthopedic instrumentation and implants

- * Contains detailed sections on investigation and diagnosis of feline orthopedic diseases and injuries, with specific chapters on diseases of the footpads and nails, tumors of the musculoskeletal system, and polytrauma
- * Surgical techniques of feline orthopedic diseases and injuries are explained step-by-step with many schematic illustrations
- * Presents both classical treatments using cost-effective implants and new osteosynthesis techniques using modern implants
- * Over 20 new and original surgical methods are included



ANAMNEZA SI FISA DE CONSULTATIE

by Petre Ciprian Dragomir



*Anamneza:
(gr. ana=din, prin + mnesis = memorie)*

Anamneza este pasul primordial intr-o consultatie si trebuie completata cu mare atentie, cu intrebari clare si elocvente. Aceasta reprezinta totalitatea informatiilor obtinute de catre medic sau de catre asistent pentru a cunoaste animalul si a intelege problema pentru care ne-a trecut pragul.

De celel mai multe ori, o anamneza completa poate orienta medicul practicant catre un diagnostic prezumtiv, catre alte investigatii care pot fi facute si catre o idee asupra tratamentului. Fie ca facem cunostinta pentru prima data cu blanosul sau este un pacient in evidenta clinici noastre, fisa lui de consultatie incluzand anamneza trebuie tot timpul completate.

Pentru o anamneza corecta si care sa inglobeze toate aspectele relevante, intrebarile sunt cele mai importante si trebuie adresate cu multa atentie si tact. De celel mai multe ori, cand sunt intrebati proprietarii uita sa mentioneze anumite aspect importante, sau din vinovatie nu le mentioneaza absolut deloc. Va sfatuiesc sa nu procedati in aceasta maniera (ma adresez aici evident cititorilor nostrii care sunt proprietari de animalute) si chiar si atunci cand ati gresit dumneavoastra cu ceva, prezentati acest aspect, totul pentru binele animalutului dumneavoastra.

Dar care sunt aspectele pe care trebuie sa le contina o anamneza?

In primul rand, pentru ce problema a venit la consultatie si daca animal este unul bland, sperios sau agresiv. Mai apoi, referitor la problema adresam intrebarile relevante pentru a intelege imaginea de ansamblu.

Cantarirea animalului este obligatorie. Consemnarea in fisa a greutatii ajuta la urmarirea evolutiei (dezvoltare fiziologica, fluctuatii de greutate) sau in vederea administrarii corecte a tratamentului.

Trebuie urmarite si semnele vitale ale pacientilor dumneavoastra, cum ar fi: Bataile Pe Minut, Respiratia Temperatura si Culoarea Mucoaselor Aparente (mucoasa gingivala sau cea conjunctivala).

Mucoasele aparente trebuie sa fie in totdeauna de o culoare roz – rosietica. Atentia trebuie sporita in cazul oricarei modificari de culoare, cum ar fii: *rosu aprins, mov, alb sau galbui.*

Daca aveti impresia ca proprietarul din fata dumneavoastra ezita sa raspunda la anumite intrebari sau nu cunoaste datele exacte, de recomandat este sa oferiti timp, adresati alte intrebari si reveniti ulterior asupra acestei probleme.

Anamneza este foarte importanta si trebuie privita cu multa atentie si seriozitate. Majoritatea, omit, uita sau considera ca nu este atat de importanta drept pentru care de celel mai multe ori nici nu completeaza spatiile dedicate din fisa de examinare dedicate anamnezei.

Retineti ca: cu cat anamneza este mai complexa, mai indetaliata si mai atent completata sunteti cu un pas mai aproape de un diagnostic si un tratament corect.

Bataii pe minut 80 – 120 bpm

Respiratie : 15 – 30 rpm

Temperatura: 38.3 – 39.2 °C



Bataii pe minut 100 – 140 bpm

Respiratie : 20 – 30 rpm

Temperatura: 38.3 – 39.2 °C



“Anamneza este atat de importanta pentru ca evidentiaza celel mai importante informatii despre animalul din fata noastra. Cum acesta nu ne poate spune ce simptome are sau ceea ce s-a intamplat, datele despre acesta si ceea ce a facut si cum s-a comportat sunt atat de importante pentru a creea o imagine ampla si completa asupra pacientului nostru



K9 IN THE ARMY

by Bryan Meguira

Dogs have always been the man's best friend. Everybody knows. It's actually the first thing we think, when people talk about dogs. Human's best friend. Sometimes more human than humans themselves.



On the picture: A soldier of the Israeli K9 Unit, "Oketz" and his Belgian Malinois

Dogs have always been the man's best friend. Everybody knows. It's actually the first thing we think, when people talk about dogs. Human's best friend. Sometimes more human than humans themselves. If you love dogs, it's probably because you have been amazed by their ability to understand us without talking, by their willing, from the day they were born, to be close to us. You may also have been touched by the way they look for our attention, or impressed by the obedience of some of them.

For some people, dogs are pets. A way to avoid loneliness, a good excuse to go outside. A social network, when they meet other dogs owners at the park. For other, they are an instrument of work, like the border collies who faithfully help their shepherd.

But I truly understood the best friend proverb with dogs that are very far from all the other dogs I met in my life. Dogs that sometimes forget to be the cute puppy everybody wants to pet. Dogs that truly give their lives for ours. The dogs I am talking about are our four paws heroes. They are soldiers without guns but their incredible nose, devotion, and, let's be honest, jaws, too.

“*The first time I crossed the road of an army dog, I was a young commander in the 97s bastion of the Israeli infantry. I knew that I loved dogs, I knew those dogs were specials. But I had no idea of the difference between Raptor, the 35 kg Belgian Malinois that joined my soldiers and me with his handler for a training, and Joy, my Pitbull-cross, that was waiting for me at home.*”

Discipline, I guessed. Just a question of hard work, and a bit of knowledge in behaviour. I thought that it should be enough.

It wasn't, of course.

I started to look for the answer 2 years after my meeting with Raptor, and I finally found it in my research for this paper.

At the end of my military service, I did a dog trainer course, that gave me later the opportunity to work with working dogs, that I had to train for explosive detection, to form a k9 special unit inside an African army. It was the first time in my life that I really had been in contact with that kind of canine. A new world opened up to me; the difference was deeper than a question of behaviour, and the selection much harder than what I could think.

For the next two issues, I will try to put the behaviourist point of view aside, and to highlight only the genetic answer to this interrogation: what make the working dogs that different from our pet dogs?

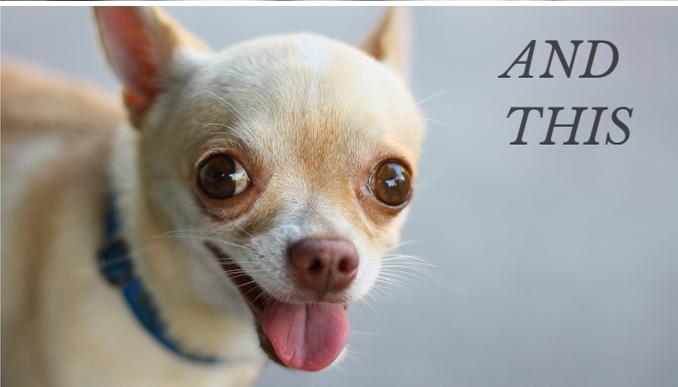


Part I: A BIT OF HISTORY

First of all, I want to explore the origins of dog’s domestication.

According to research, dogs, or *Canis lupus familiaris* (Linnaeus, 1758) were the first animal to be domesticated by humans. According to scientists, this domestication happened around 40 000 years ago. Charles Darwin (1809-1882), the father of genetics, wrote in his book *The Variation of Animals and Plants under Domestication* (1868), that he supposes the ancestor of our dogs to be a mix between a wolf (*Canis lupus*) and a Jackal (*Canis latrans*), but recent investigations shows that dogs share the most DNA with the gray wolves, than with any other canines, with 99.96% of shared DNA.

Such a high percent of similitude, but two distinct animals.



can be differentiated with only 0.04% of DNA?

How it happened? What is the difference between wolves and dogs? What is the secret of the 0.04%, and, is domestication genetically programmed? Exist a lot of hypotheses on how the dog’s ancestor started to frequent human being. The dog’s domestication is different from other animal’s in various points:

- It was preceded by a long period of commensalism and of cohabitation.
- Its emergence has not led to major changes in our society., in opposition with the small ruminant’s domestication, for example.
- Dog’s genetic patrimony haven’t been modified (2n=38, like wolves, jackals, or foxes), in contrary to other species, like wild bar (2n= 36) and pork (2n=38), for example.

Domestication supposes 2 steps:

- Commensalism. Wolves may have first followed hunters to eat all the leftover food, like a modern fox behaviour.
- Taming, being the logic continuing of this pattern.

In our modern society, those 2 phenomena are still present: humans always tend to think that without their influence, stray animals will starve. For example, we all know an old woman that feed cats in the corner of the street.

Other theories suggest that wolf’s puppies were first taken to human camps for various reasons (religious, emotional, etc..) before their usefulness was realized

But the greatest breakthrough in the search for genetic understanding of domestication comes from Russia, and the geneticist Dmitri Konstantinovitch Beliaiev (1917-1985).

In 1959, Dr. Beliaiev started the biggest known scientific experience on domestication. His project was to understand how wolves became dogs, and what are the genetics impacts of the domestication.

To realize this experiment, Dr Beliaiev’s team used silver foxes (*Vulpes vulpes*), and started a selection of the “most cooperatives foxes”, meaning, the foxes who were the less aggressive to humans. After 50 years of experience, some of those foxes were even sold as pets! The scientist team affirm that their foxes behave exactly the same way as dogs. 40 000 years of evolution in 50 years!

From the genetic point of view, here are the results:

The Beliaiev’s team has identified 103 genetic zones implied in domestication, and, more particularly, the gene SorCS. Indeed, over 60% of the domesticated individuals had the same variant of this gene, while it was totally absent from the non-domesticated ones.

According to the studies, those highlighted genetic portion correspond in humans to autism, bipolar disorders, or also to the Williams-Beuren syndrome, a rare genetic pathology related to hyper sociability. In other word: domesticated dogs are genetically “programmed” to love humans!

Beyond the changes in behaviour, this experiment has also shown us a variation in appearance: a shorter muzzle, or a larger head, for example.



Part II: CANINE AND K-9



A soldier of Oketz, the Israeli K9 unit and his dog

Now that we established the fundamentals of dog's history, let's focus on our main subject, the dogs in the army and their specificity.

The military dog in the history.

a- The Genesis

Military dogs appeared in Ancient Egypt, during the antiquity. The Egyptians were the first to venerate dogs, as we can see with Anubis (*fig. 1*), a God with a dog head. Around the XIII century before JC, dogs were used for fights. These dogs were mastiffs, large dogs of around 50 kg, that we can see in many representations. This type of dog was in opposition with the greyhound type, much thinner and used for hunting. Fighting dogs were used by Egyptians, Persians, Greeks, Sumerians. They understood that this docile animal could become aggressive on command if they were trained to (GAY, 1980).

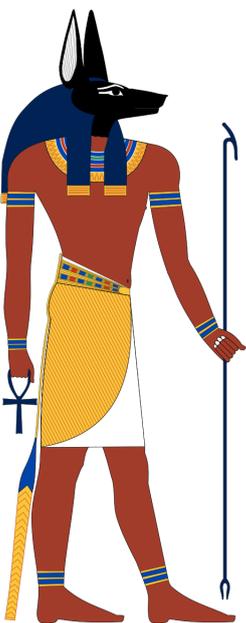


Figure 1, Representation of Anubis

In the IV century before JC, Alexander the Great had his famous dog, Peritas, which was probably a Tibetan Mastiff. Amazed by Peritas, Alexander the Great decided to furnish his army with Tibetan Mastiffs, dogs that, for example, could beat a lion or an elephant! This breed is probably the ancestor of all the mastiffs and molossoids we know today.

Later, Jules Cesar and the Roman Empire will contribute to the diffusion of military dogs all over Europe, the Empire being one of the major breeders. Very fast, it receives the name of "the thousand dogs' homeland".

From the domestication and to the middle age, military dogs are used in many ways (CHAUMETTE 1987):

- Guard dogs.
- Fight dogs.
- Fire transport dogs.
- Weapons transport dogs.
- Torturer dogs.

Even if some of those practice were not ethic, dogs were respected and idolized. In 1930, the grave of 26 of those dogs were found in the Marne, with a lot of offering inside.

In the Middle Age, we could see the same use, more or less, but with a higher frequency: as fighter, with sad uses, like, for example, in Latin America, where the conquistadors used the "Perros de sangre", the ancestor of the actual Fila Brasileiro, who took part on the destruction of Incas, Mayas, and Aztecs empires.

The appearance of new weapons put an end to the use of dogs as fighters, but opened the door to the discovery of the intelligence and power of the senses of other dogs, and that is how dogs officially became part of the army, just before the two great wars.

b- Military dogs in the two world wars

World War I

In France, the first military kennel was opened in 1911 and the dogs were officially used in 1915, but the service started to be efficient and organized in 1917. Before this year, the French authority wasn't sure of the reliability of dogs, even if they could see that in England, and in Belgium, dogs were massively used. The German army was also very advanced in the canines training field. We estimate that during the conflict, France had 12 000 dogs while Germany had around 30 000 dogs, and about 100 000 dogs were used in total during the conflict.

During the first world war, the dog's functions were the following:

- **Sentinel:** the role of those canines was to prevent the soldier from the arrivals of enemies, but in a discreet way. The hardest part of the training of those dogs was to delete the barking behaviour.
- **Guard dogs:** close to the sentinel, but with the difference that they had to bark.
- **Liaison dogs:** link two posts to each other during a battle, carry a useful indication, a request for reinforcements or rescue, and report the response.
- **Sanitary dogs:** they helped to find injured soldiers on the field. A lot of soldiers were saved by the flair of these dogs. Most of the time, the injured were searched during the night. The better accuracy of the dog's night vision on ours was then indispensable. (*fig. 2*)



Figure 2- sanitary dog during WW1

- **Draft dogs:** cheaper, and easier to care than horses, draft dogs were particularly used in the Belgian army. They could pull 80 kg in high speed, and up to 300 kg in lower speed.
- **Rat dogs:** in the trench, rats are a true scourge. Dogs were trained to kill them. (fig. 3)



Figure 3- a rat dog and its trophies



Figure 4- "our dogs on the field"

World War II

During this war, the US army trained more than 10 000 dogs, where the majority were sentinels (around 85%). Each dog was his owner property, and together they constitute the organization "dogs for defense". This organization grew more and more, and, then, was born the so called "K-9 corps", a label that is now used all over the world for the dogs units.

The more represented dogs in this corps were the German Shepherd, the Belgian Malinois, the Colley, and the Giant Schnauzer. The Doberman constituted the famous "Devil Dogs" bastion (fig 5), which was essential to detect enemies in the jungles of the Pacific.

The German army became master in the field of military dog breeding, and sent almost 500 000 dogs to the conflict. Before the war, Hitler built a training kennel next to Frankfurt. This center, the biggest in Europa, could receive 2000 dogs at once (GARAPON, 2004). For the first time, dogs were identified, followed, with a personal plug with all their information, and category of work. The majority of dogs in Germany were, of course, German shepherds.



Figure 5- A Marine dog handler and his Doberman "devil" war dog on the island of Saipan, 1944. (Orange County Register)

In France, only a few hundreds of dogs were mobilized at the beginning of the war. The army was late. Understanding the needing of canines in the army, by observing other countries, the General of the infantry decided to take the situation in hands and began recruiting dogs, with the help of the veterinary and captain Rochefrette. Dogs were selected, according to a lot of characteristics, listed in the « Manuel de dressage et d'utilisation du chien de guerre », a book edited in 1925. According to this book, dogs with natural abilities for work were the Beauceron, the Briard, the Flanders Bouvier, and the German Shepherd, while all the hunting dogs were judged too easy to distract, so not adapted to the army.

Again, new weapons = new functions.

- **Tank dogs:** an unethical method used and Russia. As puppies, the dogs were fed only under tanks. The idea was to load the dogs with bombs, and detonate them when they hit the enemy tank. Unfortunately, some dogs have also exploded... Under the tank of their owners!
- **Demining dogs.**
- **Experimental dogs:** it's during the second World War that dogs started to be used for science.

We estimate that around 100 000 dogs were killed on the field during the WWII. Collateral victims of human's cruelty and madness.

Conclusion

“Today, dogs are essential parts of our armies, all over the world. Next month, I will invite you inside the Israeli army's K9 unit: Oketz, and I will conclude this survey with the secret of dog's success: their senses. Until then... Military salute!”

Sources:

The Variation of Animals and Plants under Domestication (1868), Charles Darwin.

- <https://www.futura-sciences.com/planete/actualites/chien-chien-grand-sentimental-cest-genetique-32662/>
- <https://www.pourlascience.fr/sd/archeologie/la-domestication-du-chien-plus-ancienne-que-prevu-12640.php>
- <https://fr.wikipedia.org/wiki/Chien>
- https://fr.wikipedia.org/wiki/Domestication_du_chien
- <http://vetopsy.fr/histoire/domestication-chien.php>
- <https://www.pourlascience.fr/sd/zoologie/comment-transformer-un-renard-en-chien-9807.php>

The Genetics of the Dog, Anatoly Ruvinsky, J. Sampson

· *How to tame a fox (and build a dog)*, Lyudmila Trut and Lee Dugatkin.

· <https://www.futura-sciences.com/planete/actualites/animaux-domestication-genes-identifies-chez-renard-64358/>

· <https://www.wikichien.fr/tout-sur-mon-chien/encyclopedie-du-chien/le-chien-et-la-culture/histoire-chien-armees/>

· <https://www.mako.co.il/pzm-magazine/Article-bc1f07e817a3441006.htm>

· <https://www.idf.il/%D7%90%D7%AA%D7%A8%D7%99%D7%9D/%D7%9E%D7%A8%D7%95%D7%9D/%D7%A2%D7%95%D7%A7%D7%A5/>

· https://he.wikipedia.org/wiki/%D7%91%D7%A2%D7%9C%D7%99_%D7%97%D7%99%D7%99%D7%9D_%D7%91%D7%A9%D7%99%D7%9E%D7%95%D7%A9_%D7%A6%D7%91%D7%90%D7%99

· <http://theses.vet-alfort.fr/telecharger.php?id=2313>

· <https://historydaily.org/cappy-and-the-devil-dogs-of-the-marine-corps>

· <https://www.30millionsdamis.fr/actualites/article/14684-animaux-morts-durant-la-grande-guerre-le-necessaire-devoir-de-memoire/>

TO BE CONTINUED...



**CÂINELE ESTE
SINGURA
FIINȚĂ DE PE
PĂMÂNT CARE
TE IUBEȘTE
MAI MULT
DECÂT PE EL
ÎNSUȘI**

- Josh Billings -

THE  CAMPUS



TE PROVOC SĂ ALERGI!



1K KIDS



5K



10K



2 aprilie 2022



Campusul USAMV București

Înscrie-te acum → crosul.usamv.ro

Organizat de:



UNIVERSITATEA DE ȘTIINȚE AGRONOMICE
ȘI MEDICINĂ VETERINARĂ DIN BUCUREȘTI



Susținut de:



LET'S RUN!

02 APRIL
2022
JOIN US

CROSUL USAMV

MANAGEMENT OF TETANUS IN DOGS

by Mathilde Breton



On the picture: Nova

Etiology

Tetanus is caused by a bacterium: *Clostridium tetani* is a ubiquitous, gram-positive, obligate anaerobic, flagellate, and spore-forming pathogen that enters the body mostly through contaminated wounds. *Clostridium tetani* is found in soils overfertilized with stable manure or feces (including dog feces).

The metabolically active bacterium is sensitive to disinfectants and heat and does not survive long outside the body. In contrast, the spores formed by the bacterium in the environment are capable of infection for years under optimal conditions. They remain resistant to heat of up to 120 °C for approx. 15 to 20 minutes and to the usual disinfectants. The spores (infective form) can survive for weeks to months protected from direct sunlight. *Clostridium tetani* produces the neurotoxin tetanospasmin, which causes local or generalized painful tonic muscle spasms. Although there are strain differences within this species, all representatives produce an antigenetically uniform tetanospasmin.

Epidemiology

C. tetani is distributed worldwide. The frequency of clinically manifest diseases varies greatly - depending on the region. Tetanus develops when spores enter the body in wounds or through penetrating injuries. Under anaerobic conditions, the spores grow out at the site of contamination.

The presence of foreign bodies, necrosis or abscess formation promotes the germination of the spores. Released tetanospasmin of the vegetative form is distributed in the tissue and impairs neuronal communication in the peripheral and central nervous system. Tetanospasmin is not absorbed through the gastrointestinal tract and it cannot cross the placental barrier in animals.

Infection with *Clostridium tetani* spores occurs through contaminated wounds. Rarely does it also occur after surgical wounds in which anaerobic conditions (and/or mixed infections, e.g. bite wounds infected with staphylococcus) predominate, to infections. In most cases, the portals of entry are no longer detectable. Potential or occult portals of entry are above all gum pockets, intestines and uterus. In young dogs, an infection is often favored by the change of teeth.

“ After infection, the pathogen multiplies locally. The exotoxins tetanolysin and tetanospasmin are produced and released into the body. ”

Tetanospasmin is a dimer and consists of two molecular subunits. The larger unit mediates the binding of the toxin to nerve cells, the smaller protein unit prevents the release of neurotransmitters in the affected cells.

In the course of infection, the released tetanospasmin first binds to the axons of the motor neurons in the immediate vicinity in the area of the motor end plate. From there, the toxin in the axons is retrogradely transported several centimeters per day towards the spinal cord and further to the brain.

The pathophysiological effects of tetanus are based on the failure to release the neurotransmitters glycine and γ -aminobutyric acid (GABA). The toxin blocks the transmission of inhibitory stimuli by inhibiting the release of glycine and GABA and thus triggers peripheral tonic muscle spasms (extensor rigidity).

In extensive forms of tetanus, the affection of the extensors of the limbs or the sphincter muscles of the jaw, predominates, which ultimately determines the typical clinical appearances of the tetanus : extensor rigidity and tensed limbs and the very characteristic “Risus Sardonicus” accompanied with erect ears, enophthalmos, ...

Some of the toxin travels up the spinal cord to the brainstem where it binds to gangliosides. This leads to head muscle toning, convulsions and possibly respiratory arrest. Another part of the tetanospasmin enters various areas of the nervous system in a lymphohematogenous manner. Since tetanospasmin also acts on sympathetic preganglionic neurons, autonomic dysfunction can occur.

The presynaptic binding of tetanospasmin to inhibiting neurons is irreversible. A restoration of the function of these nerve cells is based solely on the growth of new neuronal communication fibers which explains why it takes at least a month to see a full recovery.

Clinical expression

Dogs are rather insensitive to tetanospasmin. Compared to the horse, the dog needs about 600 times the amount of the toxin to trigger comparable clinical changes by injection. On the other hand, the very sensitive species humans, guinea pigs and rabbits require 2, 3 or 24 times the amount.

Clinical changes usually appear 3 to 21 days after infection with *C. tetani*. In dogs, due to the natural resistance, the incubation period can also be longer and lead to the fact that no obvious wounds can be found. It has been underlined that a soon occurrence of clinical signs was an indicator for great severity of the disease.

Because of natural canine resistance, the localized form of tetanus is more common than the generalised form. In mild cases, the disease is limited to individual muscle groups or only to the site of infection. Other dogs show hindquarter stiffness or weakness, a stilted, unsteady gait, and extensor rigidity in one or more limbs. Even the smallest stimuli (e.g. acoustic, tactile or light stimuli) can cause generalised tonic muscle spasms, which can spread to the muscles of the head or even to the entire body.

Sometimes there is initially cramping of the facial muscles. A typical wrinkling of the forehead with the approach of the bases of the ears or the tips of the ears, a backward pull-back of the corners of the mouth and increased salivation (hypersalivation) are then noticeable. In addition, there is often narrowing of the lid fissures (blepharospasm) or wide open eyes (as a result of canthus retraction, enophthalmos with nictitating membrane prolapse and trismus) as well as dysphagia and regurgitation due to megaesophagus.

A changed facial expression, a stiff and stretched tail and a sawhorse stance (*fig.3*) of the limbs are typical.

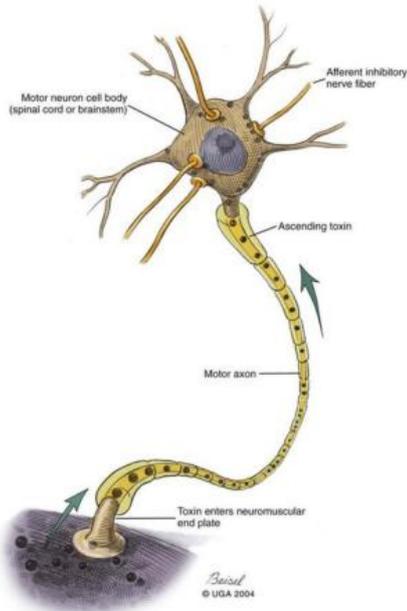


Figure 1- Retrograde intra-axonal transport of tetanus toxin into the CNS. Art by Dan Beisel 2004. Credit: University of Georgia Research Foundation.

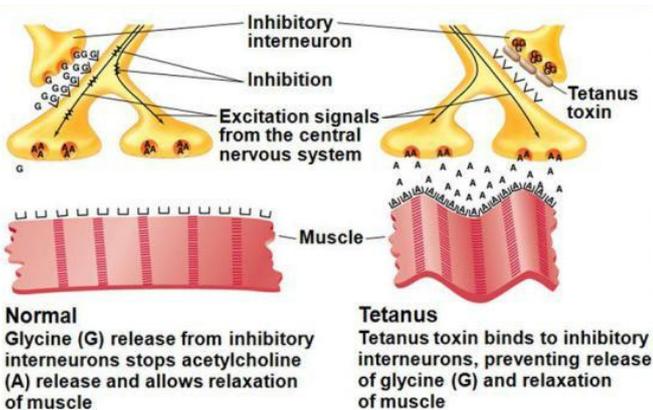


Figure 2- The action of Tetanus toxin from Clostridium tetani



*Figure 3- Characteristic “sawhorse” stance of dog with generalized tetanus. Credit: by Craig Greene © University of Georgia Research Foundation Inc.

The late stage with the inclusion of the face leads to eyelid prolapse, enophthalmia, miosis, right-standing ears, "rictus sardonius" (fig.4) and trismus.

Due to the enormous muscle activity, the core temperature can rise.

Affected dogs cannot turn over and clearly have difficulty standing up. Signs of autonomic dysfunction such as bradycardia, hypertension and tachycardia episodes as well as cardiac arrhythmias and peripheral vasoconstriction are often still present.

Tetanus is an extremely painful and devouring disease.

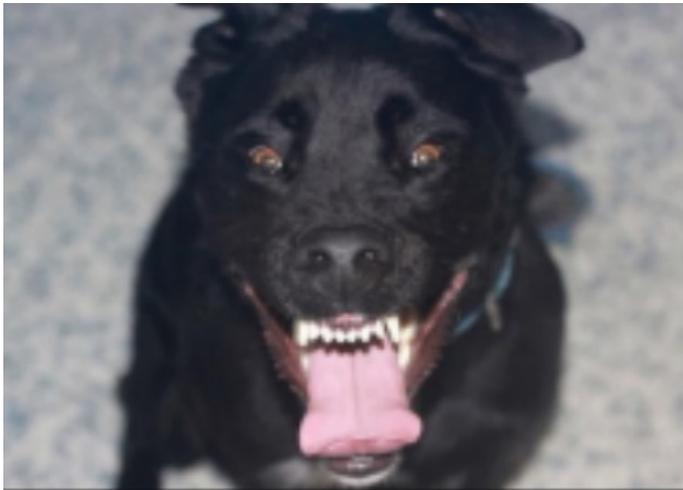


Figure 4- Rictus sardonius and erected ears.
Credit: <https://bvajournals.onlinelibrary.wiley.com>

“ Other conditions sometimes confused: meningitis/ encephalitis, rabies The most important to consider and rule out are: hypocalcemia tetany, and strychnine poisoning. ”

Diagnosis

The diagnosis is based on the clinical picture, the possible presence of a wound or wound History and epidemiological History of the area, corresponding changes in blood counts (leukocytosis, neutrophilia) and, if necessary, the increase in creatine kinase and AST activity, which are probably caused by the damage to the hypertonic muscles.

The detection of specific antibodies against the tetanus toxin can be used for diagnosing, since dogs are usually not vaccinated and an existing antibody level indicates exposure.

The detection of the pathogen by staining smears or by cultivation is not reliable. It should be borne in mind that the culture must be incubated at 37 °C for 12 days under strictly anaerobic conditions.

Depending on the site of infection and the speed at which the toxin spreads, the first symptoms usually appear 5 to 21 days after infection (often the dog went to the vet for an infected claw wound and in the following days clinical signs of tetanus appear.)

Differential diagnosis

All pathologies causing movement disorders and tetany:

Hypocalcemia (neuromuscular disorders, tetany, cramps, need to be ruled out by checking blood calcium levels.), Strychnine poisoning (only toxicant able to mimic tetany spasms of a generalized tetanus, but causes mydriasis and has to be linked with history - presence of rodenticides etc.)

All pathologies causing facial paralysis &/or stiff neck:

Degenerative myopathies of cervical vertebrae (provoques neck stiffness but no rictus sardonius), cervical fracture, idiopathic facial paralysis (looks like lockjaw but no other parts of the body should be affected), masticatory muscles myositis (but hypertrophy of the muscle in temporal area is seen).

Grading Tetanus

Severity Classes

For the purposes of the study mentioned above, cases were classified by the severity of their signs into four groups. It is important to realize that a dog's initial classification could easily change (in this study 17 dogs that were normal or in Group I at the beginning of the study ended in Group III or IV).

Group I	The dog was able to walk but also demonstrated constricted pupils, rictus sardonius, erect ears, inability to open its jaws, sunken eyes, and/or sensitivity to light.
Group II	All of the above plus erect tail, sawhorse stance, difficulty swallowing, walking stiffly with difficulty.
Group III	All of the above plus muscle tremors or spasms, inability to walk, and seizures.
Group IV	All of the above plus any of the following: heart rate below 60 beats per minute, heart rate above 140 beats per minute, high blood pressure, low blood pressure, or respiratory arrest.

Study Results

Overall, of the 35 dogs included in the UC Davis study, 77 percent survived. All of the dogs that did not progress beyond the severity of Group II survived and 50% of the dogs in Groups III and IV survived. Dogs in these latter two groups required continuous care (intravenous fluids, sedation, nutritional support, etc.)



Figure 5- Study conducted by Burkitt et al and published in the Journal of American Veterinary Medical Association in 2007

Complications

Common complications of tetanus disease are aspiration pneumonia (resulting from dysphagia and leading to the dog's death), laryngeal and respiratory muscle spasms with suffocation, and possibly sudden death. Hyperventilation, exhaustion, dysuria, constipation, gaseous abdominal distension, fractures and respiratory failure are also common.

Treatment

• Surgical approach:

In case of abscess or extensive tissue necrosis, the wounds are surgically unbridled and cleaned with hydrogen peroxide. This inhibits strict anaerobic germs by increasing oxygen tension. The chances of recovery are all the greater as wounds are identified quickly and treated surgically. Indeed, in the absence of wound treatment, localized tetanus can evolve into a generalized form.

• Medical approach:

Therapy of tetanus is based on the use of specific serums to neutralize the action of free, circulating tetanospasmin, on the use of antibiotics to kill the vegetative, toxin-producing form of *C. tetani* in tissues, and on sedatives and muscle relaxants to reduce the strength of spasms and provide rest to the patient.

Patients for whom respiratory compromise is a concern (when the respiratory muscles are affected or if there is larynx spasm) may actually need days of general anesthesia, an endotracheal tube (tube in the windpipe to keep an airway open) or even a mechanical ventilator.

The decision on whether to include tetanus antitoxin is more controversial.

It cannot remove toxins already bound to the patient's nerves but can inactivate new toxins not yet bound. Antitoxin can be given under the skin or in the muscle but can take up to 3 days to reach a therapeutic level this way. Giving it by IV is more rapid but also more dangerous in terms of inducing an anaphylactic reaction. Skin testing is commonly used to see how reactive the patient might be. It is potentially helpful in early stages of disease only.

● Antitoxins (single dose):

- Equilis Tetanus Serum, approved for horse, dog, sheep
- Tetanus Serum WdT, approved for horse, dog, sheep

● Antibiotics:

- Penicillin G: 20000-100000 U/kg i. v., i.m., s.c. every 8-12 h; 10 days
- tetracycline: 22 mg/kg p.o., i.e. every 8 h; 10 days
- metronidazole: 10 mg/kg p.o., i.v. every 8 h; 10 days

● Sedative/muscle relaxant (as long as necessary):

- Chlorpromazine: 1-2 mg/kg i.m., i. v., p. o. every 8-12 h
- Phenobarbital: 1-3 mg/kg p.o., i.m. every 12 h
- Methocarbamol: 20 mg/kg p. o. every 8-12 h
- Diazepam: 0.1-1 mg/kg i. v. if required.

The dog is kept hospitalized for several weeks as we consider recovery is reached after 3 to 4 weeks.

As violent spasms are triggered by any light or sound, they must be under strict surveillance in isolated kennels, kept in the dark and far from noises.

(and even after hospitalization, the dog must be kept in a quiet darkened room as long as they are recovering).

They are intubated to help them breathe when their larynx is paralyzed and to avoid as much as possible the risk of an aspiration pneumonia caused by the accumulation of saliva due to a prolonged lateral recumbency. A feeding tube is placed surgically so they can be fed. And Soft bedding is highly recommended to prevent hemorrhoids.



Figure 6- Dog with generalised tetanus in the ICU unit.
Credit: Vettimes

“ As violent spasms are triggered by any light or sound, they must be under strict surveillance in isolated kennels, kept in the dark and far from noises. ”

Prognosis

In mild or insidious cases, the prognosis can be rated as favorable. A clear improvement is observed from the first week and recovery can be complete in four weeks. Most animals heal within four months

However, it is prudent to reserve the prognosis in severely affected animals because of the risk of death by choking (paralysis of the diaphragm, false routes leading to aspiration pneumonia). In addition, the shorter the incubation, the poorer the prognosis and the slimmer the chances of recovery and survival.

Prophylaxis

A vaccine is available for dogs. However, preventive, active immunization with tetanus toxoid vaccine is not routinely performed in dogs due to low susceptibility. As the quantity of pathogens needed to be infected is so low, Tetanus doesn't provide any immunity. Thus, if the dog survives an infection, vaccination is highly recommended.

Veterinary practitioners must learn how to react and how to suspect tetanus cases earlier, as this disease became less frequent these past years, the lack of knowledge can lead to an enormous loss of time before the dog is treated properly. Tetanus is a severe affection that needs to be caught as early as possible to increase the chances of survival of the dog.

When a dog is brought for a pulled claw, it is highly recommended to sedate the animal, debride and clean the wound and immediately inject antitetanic serum as preventive care before the occurrence of any signs so the bacteria doesn't have the ability to bind and is immediately killed.

Sources:

Tetanus - Achtung: Erde, Staub und Tierkot! | Die Techniker (tk.de)

Tetanus - enpevet

Diagnostic, traitement et prévention du tétanos - Le Point Vétérinaire n° 249 du 01/10/2004 (lepointveterinaire.fr)

Facebook (viking vets bristol)

Veterinarian Key Tetanus

This article was written in the memory of our dearly regretted Nova.

A brave, loving, devoted, bubbly dog.

And above of all, a member of our Family who succumbed to Tetanus, and left us prematurely.

Thank you for the light you brought in our lives, our little SuperNova.

You'll always be in our hearts...



*as "The Campus" family, once more we are so sorry for our beloved friend Mathilde's loss.
Our condolences to you and your family*

MAINTENANCE DES TORTUES ET LES PATHOLOGIES NUTRITIONNELLES

by Yann Daniel



Tout d'abord il faut connaître l'espèce de tortue que nous possédons.

En effet chaque type de tortue a un environnement/biotope bien spécifique : certaines vivent dans des zones désertiques et sèches alors que d'autres vivent en milieu tempéré.

Il faut essayer de reproduire leur habitat naturel pour satisfaire leurs besoins (eau, lumière, nourriture...)

Le but de cet article n'est pas de donner les conditions d'élevage de chaque espèce de tortue mais d'aborder la reconnaissance des espèces et leurs pathologies nutritionnelles.

● La Reconnaissance

Parmi les espèces de tortues les plus répertoriées chez les propriétaires, nous retrouvons :



Figure 1: La Tortue d'Hermann (Hibernation)



Figure 2: La Tortue Mauresque (Grecque) (Hibernation/Hivernation)



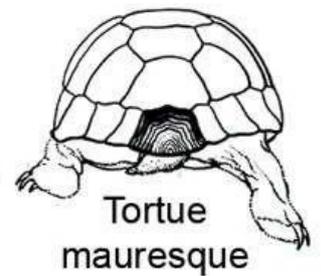
Figure 3: La Tortue Etoilée (de Birmanie et d'Inde) (Pas d'hibernation, préférable en intérieur)



Figure 4: La Tortue des steppes (Hibernation)

Beaucoup de propriétaires confondent la tortue d'Hermann et la tortue Grecque. Elles peuvent se distinguer par ces deux critères :

- La présence d'éperons (petit pic) sur la queue de la tortue Grecque
- Une écaille supracaudale double pour la tortue d'Hermann contre une écaille supracaudale simple pour la tortue Grecque.



Pour les autres :

- La tortue des Steppes a une forme de burger
- La tortue Étoilée est reconnaissable avec des motifs en forme d'étoile

● Les Bases de L'habitat

● L'alimentation

À retenir :

- Les tortues terrestres sont herbivores
- Les tortues aquatiques sont carnivores (ex : Tortue de Floride)

Voici des exemples de repas complets et équilibrés:

- Pour les tortues terrestres : elles doivent manger 90% de VÉGÉTAUX (Herbes fraîches, endives, cressons, feuilles de pissenlit, feuilles de trèfles, persil).

Des granulés à base de Luzerne peuvent être donnés.

Seulement 10% de Fruits/Légumes (en bannissant les fruits exotiques qui sont trop riches).

- Pour les tortues aquatiques : de la viande cuite deux fois par semaine.

Des granulés à base de protéines animales peuvent être donnés.

Le calcium : Les tortues sont souvent sous-alimentées en calcium, c'est pourquoi il faut compléter avec de la poudre de calcium (ou os de sèches broyés) sur la nourriture.

L'eau : Il est conseillé de faire des bains aux tortues terrestres (absorption cloacale) et de laisser des bols d'eau peu profonds pour qu'elles s'hydratent.

● La Lumière/Les UVB

Il est impératif que les tortues aient accès à une source lumineuse fournissant des UVB. En effet sans ces UV, les tortues sont incapables de fixer le calcium (ce qui peut engendrer des maladies métaboliques que nous verrons ensuite). Si les tortues vivent en extérieur, le soleil est suffisant pour cet apport en rayon UVB.

Il faut un grillage pour le haut du terrarium car les vitres ne laissent pas passer les UVB.

● L'Hibernation

L'hibernation est une période pendant laquelle la tortue va limiter ses besoins et va vivre « au ralenti ». Son métabolisme est adapté à cette période, elle fait des réserves en amont.

Cette période est pour la majorité des tortues entre Novembre et Février/Mars (12 semaines en moyenne)

L'hivernation est une période de latence pendant laquelle un animal dort plus que le reste de l'année mais celui-ci va tout de même se réveiller, se déplacer et s'alimenter.

Avant de faire hiberner sa tortue il faut savoir si celle-ci a pour nature d'hiberner dans son habitat d'origine. Si c'est le cas, voici les étapes à suivre :

Avant l'hibernation :

- Au mois d'octobre, il faut réduire un petit peu la quantité de nourriture
- Des bains réguliers (un à deux par semaine) sont donnés
- Il faut diminuer la température du terrarium pour les tortues d'intérieur

Pour l'hibernation :

- Il faut une zone avec thermostat (c'est-à-dire une zone où la température est fixe)
- La température optimale : 3 à 6°C
- Le réfrigérateur est un thermostat stable avec une température optimale pour l'hibernation : vous pouvez installer votre tortue dans une boîte avec quelques trous pour la respiration ainsi qu'un petit bol d'eau

Bibliography: Conférence Masterclass sur les NAC par Dr.Chai (18 décembre 2020)

Pour les tortues d'extérieur : elles feront un trou et y resteront.

Pour celles maintenues au réfrigérateur: vérifiez son poids en la pesant (1x/semaine) et elle ne doit pas perdre plus de 10% de sa masse corporelle. Vérifier qu'elle fait des selles.

Après l'hibernation :

- La tortue va se réveiller naturellement et vous pourrez la mettre dans son terrarium ou dans le jardin (15-20°C minimum). Donnez un bain et de la nourriture.

● Pathologies Fréquentes

● L'hypovitaminose A

Cette carence est un motif de consultation important chez les tortues. Le rétinol (Vitamine A) joue un rôle important dans le métabolisme au niveau de l'œil et notamment de la cornée. Une carence de cette vitamine va donc engendrer des pathologies oculaires.



Figure 5 : Photographie d'une tortue avec une hypovitaminose A (conf Dr.Chai)

Traitement : Il faut revoir les conditions environnementales avec son propriétaire (Nourriture / Calcium / UVB). On peut également compléter la tortue en Vitamine A.

● L'osteodystrophie métabolique fibreuse (MBD:metabolic bone disease)

Cette pathologie est la conséquence d'une carence en calcium et d'un manque d'UVB. La tortue ne va donc pas pouvoir solidifier ses os et sa carapace.



Figure 6 : Photographie d'une tortue avec une carence en calcium et un manque d'UVB (conf Dr.Chai)

Traitement : Il faut revoir les conditions environnementales avec son propriétaire (Nourriture / Calcium / UVB). On peut compléter la tortue en calcium (ou os de sèche : 1 à 2 os par semaine).



INTELIGENȚA ARTIFICIALĂ ÎN SĂNĂTATEA ANIMALELOR ȘI ZOOTEHNIE

by Andrei Diaconescu

● Ce este inteligența artificială?

Cum ar fi să putem depista o boală, înainte ca aceasta să se exprime clinic? Minunat, nu? Se pare că "tricorderul medical" (scannerul biologic inzestrat cu inteligență artificială), nu este doar un gadget fictiv din universul științifico-fantastic Star Trek, ci o viziune a viitorului, această tehnologie fiind în prezent într-un continuu proces de dezvoltare și având potențialul de a revoluționa atât medicina umană cât și medicina veterinară.

Artificial Intelligence (A.I.) a devenit un termen generic pentru aplicațiile care îndeplinesc activități complexe, care odată au necesitat o contribuție umană, cum ar fi comunicarea online cu clienții sau jocul de șah. Deși A.I. inspiră imagini ale unor roboți performanți, cu aspect uman, care vor cuceri lumea, aceasta este menită să ajute prin munca repetitivă, rapidă și lipsită de erori umane, și nu să înlocuiască ființele umane.

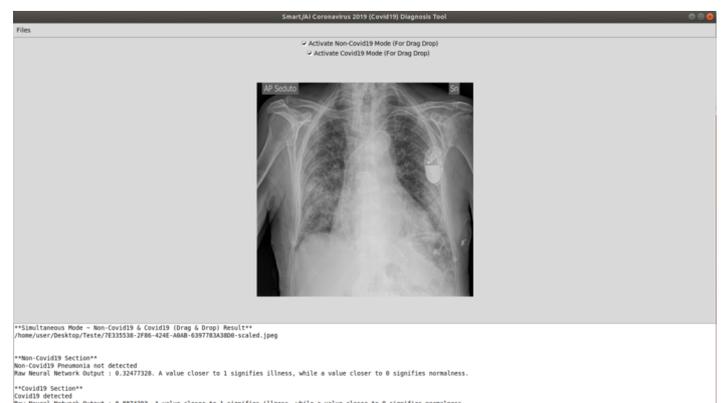
Așadar, în acest articol vom vorbi despre un subdomeniu al inteligenței artificiale, Machine Learning. Machine Learning se axează pe construcția de sisteme care pot învăța sau/și își pot îmbunătăți performanțele în funcție de datele primite și modul de funcționare ales de către utilizator.

● Cum funcționează?

Sistemul de inteligență artificială funcționează în baza informațiilor furnizate de către om, de exemplu în imagistică. Dacă ar fi să ne gândim la radiografia, în urma procesării acestor imagini, denumite și seturi de date, se antrenează/crează un așa-zis model. Pentru a crește acuratețea diagnosticului (prin comparație între model și radiografia folosită de medic), este necesară o bază de date cu radiografiile într-un număr cât mai mare (de ordinul miilor, cel puțin).

Antrenarea modelului se va face de către personal autorizat și calificat. Modelele ulterior antrenate, vor trece printr-un proces riguros de verificare, înainte de a primi aprobarea pentru folosirea în mediul medical. În România, o instituție care poate verifica un asemenea sistem de A.I., este Agenția Națională a Medicamentului și a Dispozitivelor Medicale. Inteligența artificială, prin seturile de date primite inițial dar și prin îmbunătățirile aduse de noi seturi de date, va putea recunoaște variațiile anatomice în funcție de specie și/sau rasă. Va avea capacitatea de a diferenția artefactele de imagine de modificările patologice existente.

Procedura este una relativ simplă, radiografia folosită pentru determinarea diagnosticului este încărcată în sistem, unde este comparată cu modelul antrenat anterior. Cu alte cuvinte, A.I. compară imaginea furnizată cu modele existente ce sunt caracteristice anumitor modificări patologice și generează un rezultat procentual de potrivire. Sunt furnizați doi parametri, acuratețea și precizia.



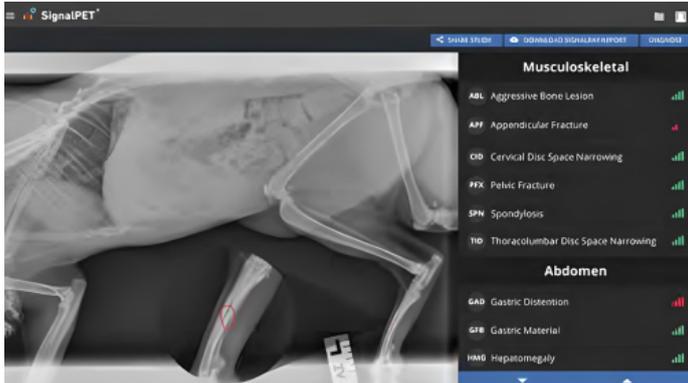
Andrei Marinescu, Expert în Securitate Națională, Intelligence și Artificial Intelligence, a pus gratuit la dispoziția autorităților române un sistem de inteligență artificială care detectează pneumonia (care apare la cazurile grave de infectare cu SARS-CoV-2) cu precizie de 92%.

Acuratețea = Raportul dintre observatia prezisa corect si totalul observatiilor;

Precizia = Raportul dintre observatiile pozitive prezise corect si totalul observatiilor pozitive prezise.

În baza celor doi parametri, personalul medical primește diagnosticul sub formă de procent, ex:

- 1-Acuratețe 84%,
- 2-Precizie 92%.



Poza și textul alăturat sunt preluate de pe website-ul Signalpet

Henry, un motan în vârstă de 4 ani a fost prezentat la o clinică pentru că șchiopăta cu membrul pelvin stâng. În urma consultului efectuat de către medicul curant, nu s-a semnalat cauza ce determină șchiopătura. S-a recomandat efectuarea unui examen radiologic, iar în urma analizării imaginilor, medicul curant nu a observat modificări care să explice semnul clinic pentru care Henry a fost prezentat la medic. Medicul i-a administrat un corticosteroid și totodată i-a instituit un tratament cu antibiotic la domiciliu. Ulterior, medicul a accesat software-ul SignalPet, care în urma analizei imaginii radiografice, a identificat o fisură la nivelul unui metatarsian stâng, ca o linie foarte subțire, asemănătoare unui fir de păr. Așadar, precizia software-ului i-a permis medicului să instituie tratamentul adecvat.

Care sunt avantajele?

Capacitatea inteligenței artificiale de a stoca și de a accesa informații, precum și calitatea și acuratețea acestora, este net superioară omului. Când ne referim la capacitățile omului, diverșii factori fizici, cognitivi, disponibilitati de tot felul, vor reprezenta dezavantaje în raport cu calitățile inteligenței artificiale.

În acest sens, putem privi inteligența artificială ca pe un "second opinion" pe care îl putem accesa oricând dorim, pentru clinicienii fără experiență, noi absolvenți, dar și pentru cadrele specializate în imagistică ce colaborează în mod curent cu radiologi certificați la nivel internațional și care nu de puține ori, se află la distanțe foarte mari.

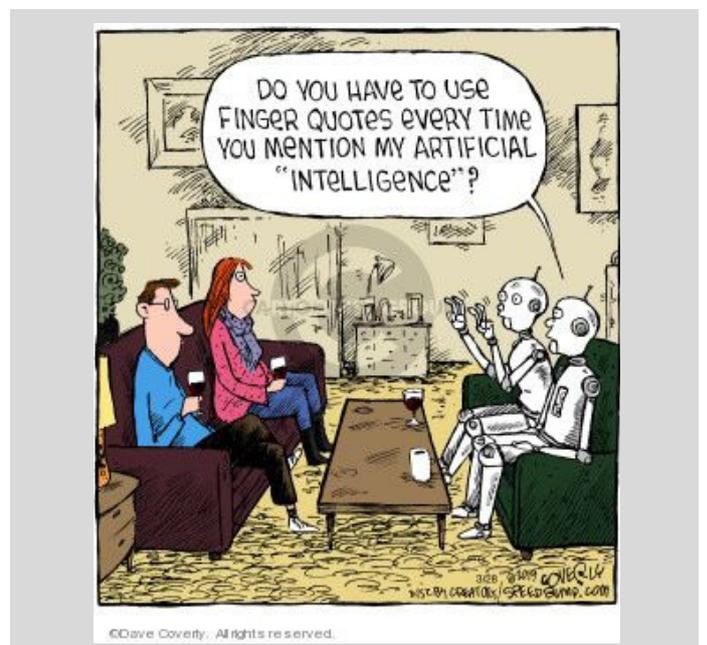
Inițial, medicul veterinar ce efectua radiografia, realiza și interpretarea acesteia, gradul de subiectivitate fiind crescut. Ulterior, imagiștii au început să trimită imaginile în vederea interpretării acestora, către specialiștii certificați din străinătate. Chiar și între acești specialiști există o bază de conlucrare de tip informatic în care se consultă cu privire la diverse interpretari, având arhive cu milioane de imagini pe care le foloseau pentru comparare.

Spre exemplu, Vetology, în anul 2017 deținea peste 8 milioane de imagini pe care le foloseau în acest sens. În anul 2018, au făcut trecerea de la "munca de Sisif", la folosirea inteligenței artificiale. Un alt software de acest fel ce se află în plină dezvoltare este cel creat de SignalPET. Acesta poate fi testat chiar pe site-ul oficial.

În România, compania Synaptiq lucrează la dezvoltarea platformei Mediq, un software bazat pe A.I. pentru delimitarea tumorilor maligne în imaginile CT și RMN, astfel reducând timpul de analiză al imaginilor, cu o mai mare precizie și obiectivitate, în cadrul procedurilor de tratare prin radioterapie a cancerului.

Concluzie

A.I., care de mult nu mai este o noutate în medicina umană, a început de curand sa fie folosită și în medicina veterinară. Prin intermediul acestui articol, am dorit să vă prezint o nouă tendință în medicina veterinară și un fragment din ceea ce pare să fie viitorul medicinei, care va crește calitatea actului medical și implicit, bunăstarea animalului. Medicii nu vor fi înlăturați, interacțiunea umană dintre medic și proprietar dar și cea dintre personalul medical și animal va fi necesară. A.I. doar ajută medicul să se degrezeze, obținând un diagnostic mai rapid și obiectiv.





TRUE COLIC IN HORSES

How to perform a complete diagnosis?

by *Chloé Loir*

Part I

Colic is defined as the manifestation of abdominal pain and represents a serious medical and economic problem worldwide. There is two types of colic:

False colic can be represented by other body systems disorders like cholelithiasis or uterine torsion.

True colic has a gastrointestinal origin and can be classified based on **small intestinal/large intestinal disorders, physical/functional disorders, obstructive/nonobstructive lesions, and strangulating/non- strangulating lesions**. In all of these colic classifications, the simplest basic etiologies for damage to the gastrointestinal tract are inflammation and ischemia. Gastrointestinal distention, ileus, mesenteric tension, and endotoxemia also play a role in the development of disease in many cases.

Depending on the time from which the animal present symptoms, the colic pattern and digestive system part affected, the age of the animal, colic can represent an **emergency**.

Also, it's important to know there are age-related colic cases, which is an information to take into consideration during signalment and history of the animal:

- in foals—meconium retention, uroperitoneum, gastroduodenal ulcers

- in yearlings—ascarid impaction

- in the young—small-intestinal intussusception, non-strangulating infarction, foreign body obstruction

- in the middle-aged—cecal impaction, enterolithiasis, large-colon volvulus

- in the aged (old)—pedunculated lipoma, mesocolic rupture

First clinical signs recognized by the owner and the veterinary doctor:

Inappetence, general restlessness and extended periods of lying down, pawing repeatedly with a front foot, looking back at the flank region, repeatedly raising a rear leg or kicking at the abdomen, rolling from side to side, sweating, stretching out as if to urinate, straining to defecate, distention of the abdomen, and decreased number of bowel movements.

Gastrointestinal causes of Colic related to the anatomical part can be represented in this table:

Gas and spasmodic	
Impactions	Pelvic flexure
Feed	Large colon
Sand (primarily pelvic flexure, large colon)	Cecum
Other intraluminal obstructions	Small colon
	Ileal
	Gastric
	Meconium impaction (foals)
	Enteroliths
	Fecaliths
	Foreign body
Large colon displacements	Right dorsal displacement
	Left dorsal displacement (nephrosplenic entrapment)
	Other
Large colon torsion and volvulus	
Small intestinal volvulus	
Strangulating lipoma	
Entrapment of small intestine	Epiploic foramen
Intussusception	Mesenteric rent
Ulceration	Gastric

Enteritis/colitis	Duodenitis/proximal jejunitis (anterior enteritis)
Inflammatory bowel disease	Colitis
Parasites	Ascarid impactions Tapeworms <i>Strongylus vulgaris</i> Cyathostomes
Herniation	Inguinal Umbilical Diaphragmatic
Peritonitis	
Abdominal abscessation	
Hemoperitoneum	
Toxins	Cantharidin Monensin Other
Other	Ileus Overo lethal white syndrome Congenital anomalies Neoplasia

Credits : *Equine internal medicine*, Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon, 2018

How to diagnose?

The initial goal in the assessment of a horse with colic is often to determine whether the case is an **uncomplicated one**, such as a gas or spasmodic colic, rather than **one requiring either extensive medical management or surgical exploration**. Signalment, history, physical examination, clinicopathologic data, imaging findings, and endoscopy may all contribute to the evaluation of a patient with colic.

● Signalment and history

- °Breed's predisposition
- °Gender is also important to consider in cases of colic (inguinal hernias, testicular torsion in stallions, torsion of the large colon in postpartum mares)
- °Duration and severity of pain,
- °Recent defecation and character of feces,
- °Appetite,
- °Previous treatment,
- °Response to treatment
- °Previous history of colic
- °Feed, access to sand, water source, deworming, dentistry, history of medications (e.g., NSAIDs, antibiotics), activity level, and stereotypic behavior such as crib-biting/windsucking may also provide valuable diagnostic information.

● Physical examination

- °General examination before giving sedation and rectal palpation

Pyrexia may increase suspicion of colitis, enteritis, peritonitis, or intraabdominal abscessation.

Tachycardia can be an indicator of pain, hypovolemia, tachyarrhythmia, or endotoxemia.

Respiratory rate may be increased in horses with colic as a response to some combination of pain, fever, and/ or metabolic acidosis.

Mucous membranes and capillary refill time (CRT) give a rough assessment of cardiovascular status and peripheral perfusion.

Normal mucous membranes should be pink and moist with a CRT of less than 2 seconds.

Tacky mucous membranes are generally observed with dehydration of at least 5% to 7%.

Prolonged CRT and either grayish or dark red mucous membranes indicate impaired cardiovascular status and poor perfusion.

Significant changes in mucous membrane color, often with a dark "toxic" line adjacent to the teeth, may accompany endotoxemia, which is common in gastrointestinal disease, particularly in horses with colitis, proximal enteritis, and strangulating lesions.

Icterus is relatively common in horses that have been off feed for more than 48 hours due to equine fasting hyperbilirubinemia.

Assessment of hydration status, attitude, abdominal distention, and the presence of injuries indicates self-trauma, often reflecting the degree of pain.

Auscultation of abdominal quadrants (left dorsal, left ventral, right dorsal, right ventral) can give an estimation of gastrointestinal motility. Gas sounds may indicate ileus. Fluid sounds may indicate impending diarrhea associated with colitis. A complete lack of sounds is usually associated with adynamic ileus or ischemia.

Auscultation of the most ventral part of the abdomen should also be performed to assess for the presence of sand. Although not always present, a characteristic "waves on the beach" sound can sometimes be heard, indicating the presence of sand in the colon.

°Nasogastric intubation (the horse is not able to vomit): the nasogastric tube can be left in place if a significant amount of net reflux is obtained to allow for repeated decompression. If no reflux is obtained and a simple colic is suspected, oral fluids with or without electrolytes or magnesium sulfate (Epsom salt) can be administered via the tube. If fluid reflux occurs, the volume and color of the fluid should be noted. In healthy horses, it is common to retrieve <1 L of fluid from the stomach.

°Palpation per rectum with sedation

The veterinarian should develop a consistent palpation method for the following: aorta, cranial mesenteric artery, cecal base and ventral cecal band, bladder, peritoneal surface, inguinal rings (in stallions and geldings) or the ovaries and uterus (in mares), pelvic flexure, spleen, and left kidney. The intestine should be palpated for size, consistency of contents (gas, fluid, or impacted ingesta), distention, edematous walls, and evidence of pain during palpation. In healthy horses, the small intestine cannot be palpated; with small-intestinal obstruction, strangulating obstruction, or enteritis, the distended duodenum can be palpated dorsal to the base of the cecum on the right side of the abdomen, and distended loops of jejunum can be identified in the middle of the abdomen.

Nephro-splenic entrapment may be suspected if the spleen is displaced medially, or the gut is palpated between the spleen and kidney.

Diagnostic tests

A packed cell volume (PCV) and total protein to assist with assessment of hydration status and possible protein loss. In general, the greatest negative indicator is a significantly increased PCV (i.e., greater than 65%) coupled with a significantly low plasma protein concentration (i.e., less than 4 g/dL).

Blood analysis usually is not performed on a standard simple colic.

*If significant colon wall compromise occurs: leukopenia with neutropenia.

*Electrolyte disorders due to: Anorexia, dehydration, diarrhea, and excessive nasogastric reflux.

*In addition to calcium and potassium, sodium, chloride, magnesium, and bicarbonate can be lost with diarrhea or significant gastric reflux.

*Metabolic acidosis due to: elevation of lactate, loss of bicarbonate.

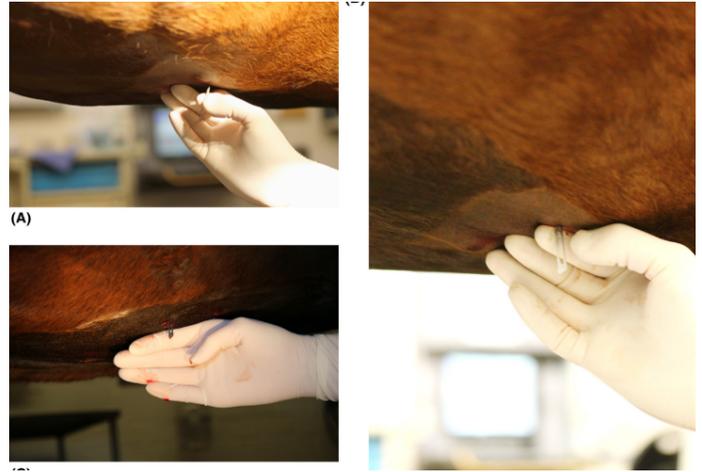
*Hepatic enzyme activities are increased: γ -glutamyltransferase (GGT) with right dorsal displacement of the large colon or proximal enteritis.

*Dehydration: elevations in creatinine and serum urea nitrogen

*Elevations in muscle enzymes: creatine kinase (CK) and aspartate aminotransferase (AST).

Abdominocentesis

First, make an incision with a scalpel blade to facilitate the entry with either an 18-g, 1.5-inch needle or a teat cannula for the collection of fluid. Location: the right of midline (to avoid splenocentesis) on the most ventral point of the abdomen at least several inches caudal to the xiphoid.



Liquid analysis: cytology tools or basic assessment by visual evaluation for color and clarity, and total protein can be evaluated with a refractometer.

***Normal fluid:** odorless, nonturbid, clear to pale yellow color.

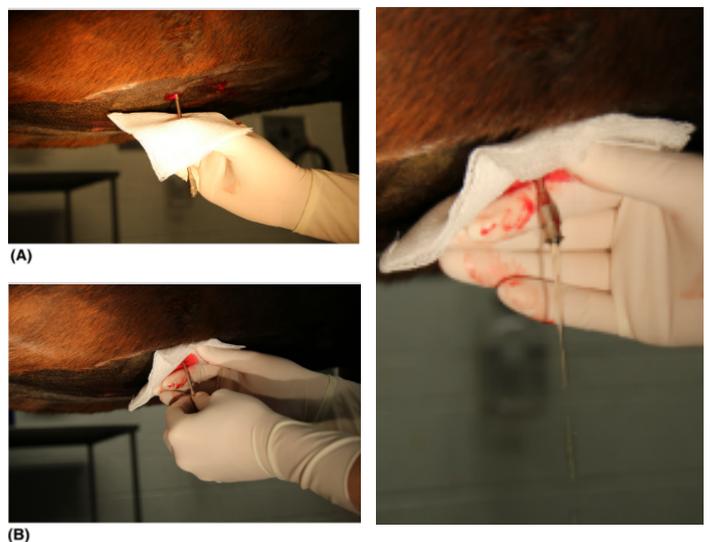
***Increased turbidity:** increased protein, increased total nucleated cell count, or both. *Normal total protein should be less than 2.5 g/dL.

***Cell count** is typically less than 5000 cells/ μ L, although it may be normal up to 10,000/ μ L.

***Serosanguineous fluid** usually reflects a strangulating obstruction or significant compromise to the bowel wall.

***Dark fluid and bad smells:** gastrointestinal structure rupture.

***Lactate concentration increased:** intestinal hypoperfusion, Peritoneal fluid lactate increased simultaneously with increased blood lactate: intestinal ischemia secondary to a strangulating obstruction



Diagnostic Imaging: more sensitive than rectal examination

Use a curved linear transducer.

Protocol:

***Left side:** ventral abdomen, gastric window (how many intercostal spaces), splenorenal window, and left middle third of the abdomen. We can identify left dorsal displacement of the large colon, also referred to as a nephrosplenic entrapment. The spleen cannot be visualized against the body wall, or the kidney cannot be visualized on the left side because of the interference of large colon.

***Right side:** duodenal window, right middle third of the abdomen, and cranial ventral thorax. Ultrasonography is particularly valuable in the evaluation of small intestinal distention and motility. Visualization of colonic mesenteric vasculature can be a predictor of right dorsal displacement of the large colon, a 180° large colon volvulus, or both.

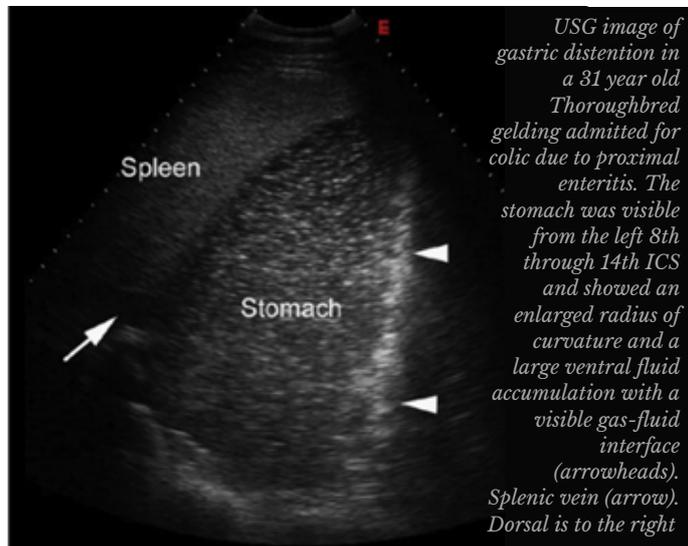
The right dorsal colon, which may be extraordinarily thickened with right dorsal colitis.

***Inguinal region or ventral abdomen region:** small intestine, and it should normally be collapsed or have a very small diameter with frequent peristalsis. Small intestine can be evaluated for dilation, motility, and thickening of the intestinal wall. The presence of dilated turgid small intestinal loops is highly sensitive and specific for small intestinal obstruction, although enteritis cannot entirely be ruled out.

Gastroscopy

When equine gastric ulcer syndrome is suspected or to evaluate parasites. Ideally both fecal flotation and a fecal egg count should be performed.

Annex 1: Ultrasound common examples of colic situations:



Credit: Courtesy of Dr. Byrne, Alamo Pintado Equine Medical Center, Los Olivos, CA



USG images of descending duodenum (D) from 2 different horses with colic. Images were obtained from the right 15th and 16th ICS, respectively. Dorsal is to the right. (A) Duodenal distention and hypomotility are present in this 23 year old Morgan gelding diagnosed with splenic B-cell lymphoma at necropsy. (B) Moderate duodenal thickening (6.7mm) is seen in this 16 year old Arab mare with multiple recurrent episodes of colic. Diffuse thickening was also noted of small intestinal loops throughout the ventral abdomen. RK, right kidney

TO BE CONTINUED...

Bibliography:

Overview of Colic in Horses By James N. Moore DVM, PhD, Department of Large Animal Medicine, College of Veterinary Medicine, University of Georgia, Oct 2021

Ultrasound of the acute Abdomen by Sarah Le Jeune et Mary Beth Whitcomb, Jun 2014

Abdominocentesis techniques in horses by Rolfe M. Radcliffe DVM, DACVS, DACVECC, Jacqueline A. Hill DVM, Sharon Y. Liu DVM, Vanessa L. Cook VetMB, PhD, DACVS, DACVECC, Samuel D. A. Hurcombe BSc, BVMS, MS, DACVIM, DACVECC, Thomas J. Divers DVM, DACVIM, DACVECC, Jan 2022

Anatomy of the Horse, 6th Edition with Aaron Horowitz and Rolf Berg, 2009

Equine internal medicine, Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon, 2018

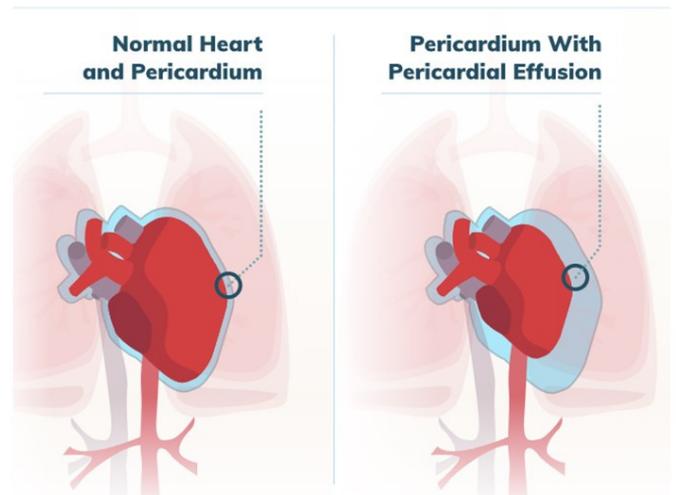
DEALING WITH PERICARDIAL EFFUSION IN **EMERGENCY**

Pericardial effusion is one of the true emergency situation. So let's deep dive to this life threatening condition together...

by Nestian Maria

4 5 6

The heart is placed in the thoracic cavity, between the lungs. It is a four chambered organ that pumps blood with nutrients and respiratory gases through the body. It is covered in a pericardial sac that consists of a parietal and visceral layer. Normally, this virtual cavity contains two to ten milliliters of clean, thin, serous fluid that acts primarily as a lubricant. Even if there is a possibility for animals to live without an intact pericardium, it is an important structure that prevents the heart from excessive motion and from neoplasia or infections.



Inappetence, general restlessness and extended periods of lying down, pawing repeatedly with a front foot, looking back at the flank region, repeatedly raising a rear leg or kicking at the abdomen, rolling from side to side, sweating, stretching out as if to urinate, straining to defecate, distention of the abdomen, and decreased number of bowel movements.

● **Diagnosis**

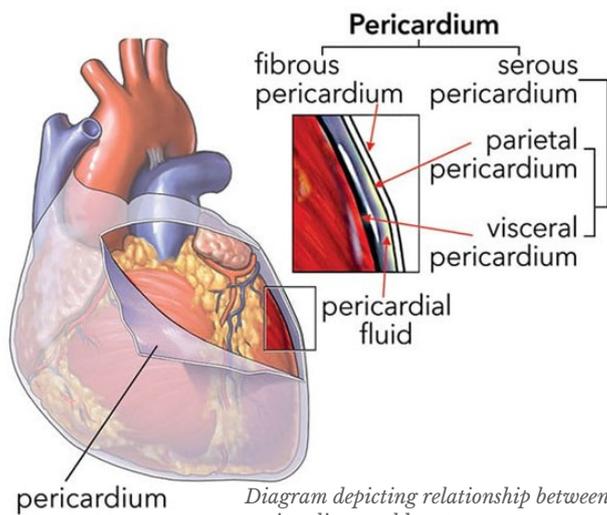


Diagram depicting relationship between the pericardium and heart.
Credit: www.todaysveterinarypractice.com

In pathologic cases there may be excessive fluid in the pericardial space. This condition is called pericardial effusion and it is considered a cardiac emergency situation that it is most commonly diagnosed in canine patients. In some cases, there may be a large fluid collection in the pericardial space that will compress the heart, especially the right ventricle that has a thinner wall – this is called cardiac tamponade. It may be caused by congestive heart failure, infections, neoplasia, idiopathic, congenital or other.



Dog with abdominal distension due to pericardial effusion
Credit: www.researchgate.net

The effusion can be acute (develops quickly) or chronic (develops slower). A patient with chronic pericardial effusion presents signs caused by right-sided heart failure such as: weight loss, lethargy, exercise intolerance, distended abdomen or respiratory difficulty. Dogs with acute pericardial effusion usually present a history of acute collapse or weakness secondary to decreased cardiac output.

● **Physical examination**

Unfortunately, there are no pathognomonic signs for this illness, but there is a compendium of symptoms that help you with the diagnosis. Muffled heart sounds, jugular venous distention and poor pulse quality are a combination of several classic findings that highly indicate the diagnosis of pericardial effusion.

Other findings may include tachycardia, hepatomegaly, ascites and tachypnea or dyspnea.

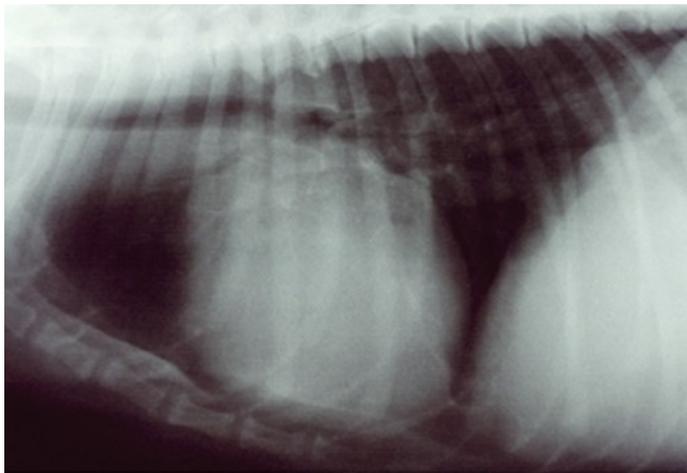
● **Blood analysis**

We may find mild anemia due to chronic disease, increased leukocytes, nucleated erythrocytes or acanthocytes in dogs with pericardial effusion, especially the ones with hemangiosarcoma.

Serum chemistry tests results are usually in normal limits, but there may be an increased urea and/or creatinine that could be a consequence of renal dysfunction due to the decreased cardiac output.

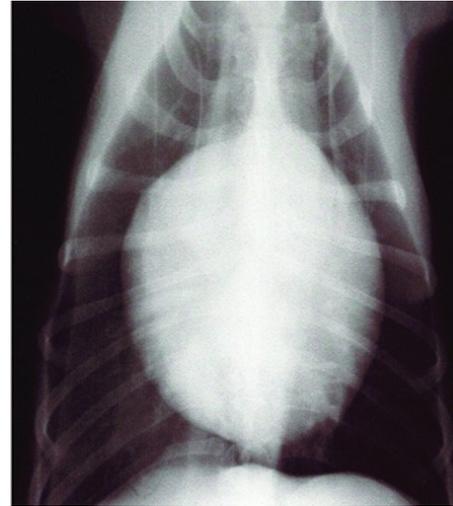
● **Imaging / Radiography**

Even if the radiography is less sensitive than an echocardiography it is easy to see the globoid-shaped heart silhouette due to an excessive amount of fluid accumulation in the pericardium.



Pleural effusion may be present, and the caudal vena cava may be enlarged secondary to right-sided congestive heart failure. In addition, the edges of the cardiac silhouette may be very "sharp" due to decreased motion artifact from cardiac contraction.

Thoracic LL radiograph of a dog with pericardial effusion showing a large globoid cardiac silhouette with sharp margins and an enlarged caudal vena cava. Credit: www.vetfolio.com



Pleural effusion may be present, and the caudal vena cava may be enlarged secondary to right-sided congestive heart failure.

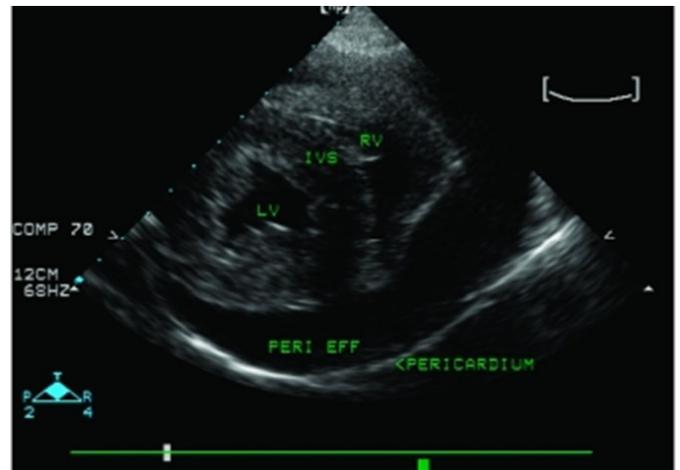
The same dog with the VD radiograph with pericardial effusion showing a large globoid cardiac silhouette with sharp margins and an enlarged caudal vena cava.

Credit: www.vetfolio.com

● **Echocardiography**

This imaging method is considered “the gold standard” for pericardial effusion diagnosis. Even if this method will not give you a final diagnosis, it is quite easy to identify the mass and associate it with the symptoms.

For a definitive diagnosis you need a little more knowledge and a complex examination. A left parasternal view that allows you to see the right side of the heart, identifying the atrial masses, a right parasternal view where you can identify an echo free space between the pericardial sac and epicardium.



Echocardiogram from the right parasternal short-axis view of a dog with pericardial effusion showing an echo-free space between the pericardium and right ventricular free wall. Credit: www.vetfolio.com

“Echocardiography is the gold standard” for pericardial effusion diagnosis. Even if this method will not give you a final diagnosis, it is quite easy to identify the mass and associate it with the symptoms.”

● *Electrocardiography*

It is a useful diagnostic tool, showing the heart's electrical activity. The electrocardiogram of a patient with pericardial effusion has smaller QRS complexes. The R-wave amplitudes are cyclically changed because of the motion of the heart in the pericardial sac.



A normal electrocardiogram does not exclude pericardial effusion diagnose.

● *Fluid analysis*

Analysing the fluid removed by pericardiocentesis helps us find the etiology of the affection.

Parameter	Pericardial fluid reference range	Pericardial effusion due to tumours/mass	Other aetiologies of pericardial effusion
pH	7.34-7.47	6.75-7.53	7.17-7.53
Po ₂ (mm Hg)	34-40	21.1-84.4	26.7-50.4
Po ₂ (mm Hg)	48-56	12.0-84.5	15.0-201.6
HCO ₃ ⁻ (mEq/L)	18-24	11.5-24.1	17.5-30.8
Sodium (mmol/L)	147-154	131-154	127-149
Potassium (mmol/L)	3.80-4.90	3.1-5.5	3.5-4.9
Chloride (mmol/L)	109-120	97-120	103-121
Ionized magnesium (mmol/L)	0.14-0.42	0.18-0.61	0.20-0.50
Ionized calcium (mmol/L)	1.17-1.38	1.09-1.37	1.11-1.31
Glucose (mg/dL)	82-117	10-154	23-128
Haematocrit (%)	35-54	3-62	4-48
Blood urea nitrogen (mg/dL)	7-28	6-74	7-30
Lactate (mmol/L)	0.2-2.4	1.9-12.5	1.3-12.7

● *Pericardiocentesis*

As I said before, pericardial effusion is an emergency. Especially when cardiac tamponade is diagnosed, pericardiocentesis should be performed fast. This procedure will reduce the pericardial pressure resulting in greater cardiac output and a decreased heart rate, which will also improve the clinical conditions.

What you will need:

- A proper catheter for your patient
- Lidocaine – for local block
- Syringe with lidocaine - in case your patient has arrhythmia during the procedure
- Extension set - to connect the 3-way stopcock and syringe
- 3-way stopcock
- Syringes
- A container to collect the liquid
- ECG monitoring
- Sample tubes – to send the collected liquid to the lab
- An assistant
- Disinfectant
- Sterile gloves

Preparation of your patient

- this is a sterile procedure
- it is recommended a lateral recumbency – it's easier to make you patient to stay still in this position, but be careful that some animals may require a procedure performed in sternal recumbency
- it is also recommended to perform the pericardiocentesis from the right side. In that way you avoid injuring the lungs and carotid arteries. Left- sided pericardiocentesis allows you to differentiate the blood from effusion from accidental puncture of the left ventricle (that has oxygenated blood with a brighter color than the fluid from the pericardial sac), the left ventricle also has a thicker wall(in that way it is harder to penetrate it) and higher pressure (you will feel a pulsatile flash back in the catheter if you penetrate it).

● *Step by step pericardiocentesis*

01 The best spot for pericardiocentesis is in the area between the 4th and 6th rib – where the elbow hits the body wall when flexed. Aseptically prepare the location then infuse the local anaesthetic. Insert the needle perpendicular to the thoracic wall, just above the costochondral junction. Make sure you are not in a blood vessel then instill the anesthetic as the needle and syringe are withdrawn.



02 Perform a second aseptic scrub before starting the procedure.

03 Connect the syringe to the stopcock and connect the extension tubing on the other side of the stopcock. You can give the syringe to your assistant as it does not have to be sterile.

04 Introduce the catheter straight and slowly, advancing until you see fluid in the hub of the catheter. Once you observe the liquid, advance the catheter off the stylet 1-2 cm into the pericardial sac. Remove the stylet and attach the extension tubing to the catheter hub.



05 Your assistant (as shown on the picture left) can slowly remove the pericardial liquid that looks like venous blood.

06 Put some liquid into collection tubes and some in a small dish to be able to see if there are clots. Clotting blood may indicate a hemorrhage - remove the catheter immediately if you see clots.



07 Remove as much liquid as you can. In large dogs, there may be 300 to 400 mL of pericardial effusion. Empty the syringe in the collection vessel.

08 Send to the lab tubes and stemples that can be used for culture. There are rare cases of septic pericarditis, but diagnosing it helps treating the cause.

09 Repeat the ultrasonography to determine how much fluid remained in the pericardial sac. If you see there is a large volume of fluid, recheck in 10 minutes. If there is still a lot of liquid, you can repeat the pericardiocentesis. Don't judge the success of a pericardiocentesis based on the volume of liquid removed.



Complications

Statistically, a correctly performed pericardiocentesis carries a low rate of complication in the canine patient. It is important to distinguish procedural complications from effects of the underlying disease. In most cases it is not possible to classify between them. Most complications occur during or shortly after the procedure and may include arrhythmias, ventricular tachycardia, hemorrhage, pneumothorax or cardiac arrest.

Arrhythmias are the most common and may be attributed with underlying disease, needle contact with the epicardium or reperfusion syndrome. That's why it is recommended to continue monitoring your patient after the procedure to make sure he does not develop arrhythmia and to always have a syringe with lidocaine during the procedure, just in case of emergency.

Treatment

The treatment is fluid removal from the pericardium – pericardiocentesis; as it provides immediate relief of cardiac tamponade.

Diuretic therapy should be used with caution since their use may result in further reduction in ventricular filling, **they are not recommended before the procedure.**

Considering that pericardial effusion can reappear after some time, pericardiectomy – the removal of part or complete pericardium, can be a definitive treatment of idiopathic pericardial effusion and a palliative treatment of neoplasia.

Medical management is rarely effective. Anti-inflammatory therapy may be used to avoid fluid recurrence, prednisolone in anti-inflammatory doses may be used to treat idiopathic effusions. Chemotherapy may be used in some pericardial effusion due to neoplasia but varies for different tumor types.

References:

(2019). *Pericardial Effusion in Dogs*. In S. O. Bekoe, M. Saravanan, R. K. Adosraku, & P. K. Ramkumar (Eds.), *Veterinary Medicine and Pharmaceuticals*. IntechOpen. <https://doi.org/10.5772/intechopen.89051>
 Oriana D. Scislowicz, BS, LVT
CVCA – Cardiac Care for Pets, Richmond, Virginia
Pericardiocentesis April L. Paul, DVM, DACVECC, Tufts University 2016
WSAVA/FECAVA/BSAVA World Congress 2012
 Karen Humm, MA, VetMB, CertVA, DACVECC, MRCVS
The Queen Mother Hospital for Animals, The Royal Veterinary College, North Mymms, Herts, UK
Adverse events associated with pericardiocentesis in dogs: 85 cases (1999–2006)
 Karen R. Humm MA, VetMB, DACVECC, MRCVS, Elizabeth A. Keenaghan-Clark MA, VetMB, MRCVS, Amanda K. Boag MA, VetMB, DACVIM, DACVECC, FHEA, MRCVS First published: 12 August 2009
<https://www.dvm360.com/view/how-perform-pericardiocentesis-2010>
Pericardiocentesis - clinical signs and treatment Rachel McDermott RVN CertVNES Armac Veterinary Clinic, 147 The Rock, Bury, Greater Manchester, BL9 0ND, U

HOW CAN I TAKE CARE OF MY PATIENT OWNERS AND MYSELF DURING AN EUTHANASIA CONSULTATION ?

7 tips to deal with the death of your patients

by Claudia Schimenti

Even if we all prefer to save lives, sometimes a veterinarian practitioner has to take the decision to put an animal down. In these situations, it is his role to explicitly explain to the owner what euthanasia means, and to assist him in taking this hard decision. When this time comes, one veterinarian may completely detach emotionally from the situation, while another one may feel overwhelmed by it. On one hand, if you are too detached you might not perceive the emotional distress of your patient owners regarding their pet's situation or appear cold, and build yourself a bad reputation. On the other hand, if you are too connected emotionally, you might drown yourself within your patient owners emotions, and your mental health will be negatively impacted.

Death is still kind of a taboo subject nowadays, and speaking about it generally makes your interlocutor uncomfortable. This is why I invite you to read these 7 tips to deal with terminally ill patients, being aware it is not an exhaustive list and you can complete it with your own ideas.

Take care of yourself, both physically and mentally

Avoid skipping meals during the day because you “don't have the time to eat”. Not only the frequency but also the quality of your meals is primordial. According to several scientific researches, a frequent junk food consumption is significantly coupled with the development of symptoms of mental health issues such as anxiety, stress and depression. But you can still treat yourself with one or two “cheat meals” per week !

Take frequent breaks, during which you will relax for real and not feel guilty because you are currently not working. Watch an episode of your comfort show, play a game on your phone, read a chapter of your book, or have a chat with your friends and family. Ideally, have a separate room in your clinic or hospital that is dedicated to these breaks only.

Question yourself about what you like to do, and what are your hobbies: if your answers systematically start with “I used to”, then most likely you are being overwhelmed by work and need to find a new balance in your life.



The “I used to” trap that indicates it is time for you to re-balance your life between your work and your hobbies. Credit: Claudia Schimenti

You also probably noticed already that when you don't sleep well enough, you find yourself in a very bad mood for the entire day. Being sleep-deprived actually significantly lowers the activity of your medial-prefrontal cortex, leaving you less able to modulate your emotions and deal appropriately with a certain context.

Developing your knowledge about the ways to deal with terminally ill patients is another way to take care of yourself, as it will give you the opportunity to approach these situations with more confidence and mental peace. Having a functionally organized schedule will also allow you to have enough time between the different patients.

In this way, you can take a break after a difficult consultation and be ready for the next one.

Learn to recognize when you are drowning emotionally, and find your own ways to get better.

How could you help other people if you are in distress yourself?

● Ask yourself where you stand regarding the animals' death

What do you really think about the animals' life and death? How does it impact you emotionally? Be aware of the control you really have and don't have on it.



Know that depending on the clients, their relationship with their animals and with you, as well as their financial means, they might not agree with your solutions to either extend their pet's life or end it.

Don't feel responsible if they disagree with you after you gave them an honest and full description of the animal's situation.

● Be aware that all of your patient owners are different

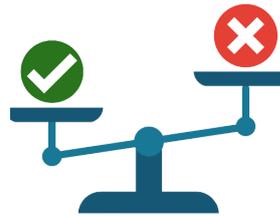


Some will see their pet as a member of their family, other patient owners will consider him more like a friend bringing them joy and emotional support in their daily life, and some will consider him with a more utilitarian approach. Try to assess this relationship owner-animal. Are they talking a lot to their animal?

Petting and kissing him? Do they feel understood by him? Do they own their pet or do they live with him? What percentage of their personal income are they spending on their animal's needs compared to their other living expenses? Did you already talk about the death of their animal, and if yes how did they react? Note that some of your patient owners might disagree with the idea of euthanasia itself due to their personal beliefs.

You should also know that not all of your patient owners have the same financial situation. Some might be at ease and ready to try any solution to extend their pet's life, while some might be financially struggling and feel very guilty not being able to pay for therapies before choosing euthanasia.

● Ask yourself where you want to stand regarding your relationship with the patient owner and their animal



Do you see yourself as a solution to your patient owner's issues, and you expect him to follow your recommendations whenever you offer him a solution?

Are you more like a person **transmitting the information**, and you just offer him a variety of solutions among which he can pick the one he prefers? Do you think you are an emotional support and when you give several solutions to your patient owner you assist him in choosing which one he prefers? Or are you totally detached from your patient owners' decisions, so you expect him to choose independently what he decides, and maybe even come up with his own solutions before your appointment?

Do you feel like you stand for the animals rights to the owner or more like you are responsible for the owner? Do you prioritize your relationship with the animal, the owner, or more globally the entire family including the pet?

ANY OF THE ABOVE IS ACCEPTABLE in our profession, but it is important for you to know where you personally stand so you can explain your position to your patient owners.

● Recognize when your client needs a type of professional help that you can't provide

Like mentioned above, the types of relationships you will see during your daily practice between a human and an animal will vary greatly. Each duo patient owner - patient is unique, and thus needs to be addressed accordingly.



If your patient owners identify their pet as their children or another family member, they can end up in a real emotional distress when this animal dies. You also probably noticed that some of your clients seem socially isolated and rely on your team and yourself as their emotional support.

The visit to the vet became a nice opportunity for them to talk with other people. For these persons, losing their animal also means losing the opportunity to visit your clinic and have a chat.

Be attentive to a patient owner saying he doesn't eat nor sleep anymore, who says he constantly thinks about his dead animal, or even shares suicidal thoughts. Offer him the contact of a mental health professional. Do not try to be a psychotherapist yourself, as it is not your job and you might absorb these patient owners' despair, thus impacting your own mental health.

Take care of your team

You are not the only one dealing with the patient owners and their animals. Maybe one member of your team had a special connection with them. Give your team the chance to talk about it with you or someone else.



Always express how grateful you are to a team member who put a particular effort into accompanying a patient owner and his animal in this terminal phase.

Be attentive to their physical and mental health as much as yours, and give them the opportunity to take a day off if they need it. Knowing they could do it if they wanted to is already of great emotional support.

Adapt your practice for such consultations



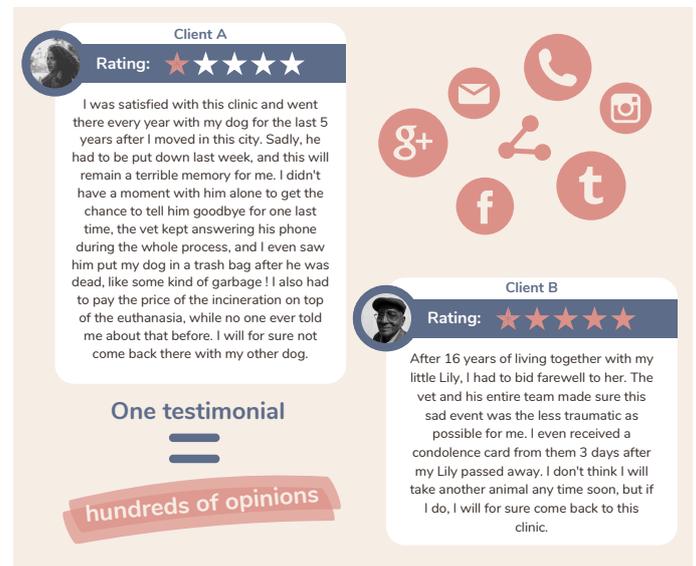
Before the patient is terminally ill, discuss this ultimate step with your clients. This will allow you to assess how they feel about it and to properly prepare them and yourself for this day to come.

Put at their disposal the necessary informations regarding this moment: what are the steps of an euthanasia? What are the different means to dispose of the body afterwards and what are their costs? How will their other animals react to this loss? Let them also know that a dead cat or dog will remain with his eyes open, or that he might urinate or defecate on himself.

When an euthanasia is scheduled on your day, make sure everything is ready prior to this consultation. Have a sign on the door to make sure your team won't disturb this moment unless there is a true emergency. If they want to, let the owners alone with their pet before the final injection. Put tissues at their disposal, and ask them if they want a glass of water.

Offer your patient owners a panel of symbols if they are looking for a way to memorialize their pet, such as a paw print or a box to keep a tuft of hair. Put the animal in a funeral body bag instead of the trash bag looking ones. You can offer your patient owner to close the bag themselves and by this way help them become conscious of their animal's death.

Keep the link with the patient owners even after the euthanasia by sending them a condolence card manually signed by all the team, about 3 days after, via a postal service. At the end of the day, they need to still trust you and be grateful for your service. A consultation for euthanasia that is taken care of properly gives you more serenity, some peace of mind, and allows you to avoid the scandals or online bashing.



Fictional online testimonials after a consultation for euthanasia. Credit: Claudia Schimenti

Conclusion

A consultation for euthanasia is certainly complex. Even if it might be a painful memory for your clients, all the special attentions you will put into place during that process will make it more bearable for them. If they have another animal one day, they will probably remember how you took care of them and will come back or not to your clinic. Your and your team's mental health are also of great importance. I invite you to share these tips with your colleagues and friends working in the veterinary field and to discuss it together.

Sources:

- *Ten Tips for Veterinarians Dealing with Terminally Ill Patients.* Akashi A., *Vet Clinic Small Animals* 41, 2011.
- *Vincent Dattée, AnimaCare visio-conference "Enjeux de la prise en charge de la fin de vie des animaux familiers", 28/11/2020.*
- *Junk Food Consumption and Symptoms of Mental Health Problems: A Meta-Analysis for Public Health Awareness.* M. Hafizurrachman1, R. K. Hartono, 2021.
- *Sleep deprivation in adolescents and adults: Changes in affect.* Talbot, L. S., McGlinchey, E. L., Kaplan, K. A., Dahl, R. E., & Harvey, A. G. *Emotion*, 10, 831–841, 2010.

Primavara Frumoasa



Mărțișorul is a tradition celebrated in Romania, Moldova and Bulgaria on the first day of spring that quite literally translates to "Little March". Normally, it's represented by a red and white twisted string with hanging tassels at both ends on which you can find different charms showing figures such as: a snowdrop flower (that signifies the spring that is to come, purity, a new beginning), a chimney sweep, a clover or a horseshoe (symbols of luck) and it's given only to women and girls by the opposite gender. However, over the years, this classical amulet has turned into chocolates or brooches or, if you want to keep it traditional, but not fully, you can find mărțișoare with charms of numerous shapes, colors and sizes, such as cute animals or jewel-toned flowers.



UNIVERSITATEA DE ȘTIINȚE AGRONOMICE ȘI MEDICINĂ VETERINARĂ DIN BUCUREȘTI
FACULTATEA DE MEDICINĂ VETERINARĂ



ZILELE FACULTĂȚII DE MEDICINĂ VETERINARĂ



Expo



Ateliere



Adopții



Sfaturi de la profesioniști

13-15 MAI 2022



Campus Veterinară-Cotroceni
Splaiul Independenței 105, București

