UAB
Universitat Autònoma de Barcelona

Neurology

Code: 104668
ECTS Credits: 3

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OT	5	A

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: english (eng)

Some groups entirely in English: Yes

Some groups entirely in Catalan: No

Some groups entirely in Spanish: No

Teachers

Cristian de la Fuente Hernández

Prerequisites

There are no specific requirements, but it is highly recommended that students have enough basic knowledge of: anatomy, physiology, histology, etology, animal protection and management, pathology, nutrition and pharmacology.

On the other hand, it is also recommended that students have basic clinical knowledge acquired in the common courses "Companion Animal Medicine and Surgery I and II.

Objectives and Contextualisation

This course introduces students to the knowledge of the neurologic diseases of medical or surgicla treatment more common in small animals. It is an elective course of 5th grade, highly important ofr students who wish to acquire knowledge and clinical habilites in the different speciality areas of small animal medicine and surgery. The main formative goals are:

- To learn the Neurologic examination, its interpretation and to learn to localize lesions in the nervous system.

- To learn the diseases and pathological processes that affect the nervous system more commonly in small animals.

- To learn to make a differential diagnostic list for a mall animal with specific neurologic clinical signs.

- To know which diagnositc methods are appropriate for each case and to learn how to interpret them.

- To learn how to manage small animals with neurologic disease.

- To learn the treatments for the most common neurologic diseases in small animals. .

- To know the surgical techniques more commonly used in small animals with neurosurgical disease, their indications and prognosis.

- To know the prognosis and to follow the course of the most common neurologic diseases in small animals, including the post-mortem examination by assisting to necropsies of euthanized animals.

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Apply scientific method to professional practice, including medicine
- Attend to emergencies and perform first aid in veterinary science.
- Collect, preserve and issue all types of samples with the corresponding report.
- Comunicar la informació obtinguda durant l'exercici professional de manera fluïda, oralment i per escrit, amb altres col·legues, autoritats i la societat en general.
- Demonstrate knowledge and understanding of the general bases of medical and surgical treatments.
- Demonstrate knowledge of the rights and duties of the veterinarian, with a special focus on ethical principles
- Diagnose different individual and collective animal diseases, and know about prevention measures, with emphasis on zoonoses and notifiable disease.
- Diagnose the most common diseases using different general and instrumental techniques.
- Have basic knowledge of the profession, and in particular of the organisation and functions of professional practice.
- Make clinical records and accurate and complete clinical exploration of animals.
- Perform basic analytical techniques and interpret the clinical, biological and chemical results, and interpret the results of tests generated by other laboratories.
- Perform the most common medical and surgical treatments of animals.
- Prescribe and dispense medicines correctly and responsibly in accordance with legislation, and ensure that the medicines and waste are stored and eliminated properly.
- Recognise when euthanasia is necessary and perform it humanely by employing the appropriate method.
- Safely perform sedations and regional and general anaesthesia, and evaluate and control the pain.
- Treat and handle animals in a safe and humanitarian manner, and instruct other people to properly employ these techniques.

Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Apply and interpret control and surveillance systems in ICU, hospitalisation and surgery, specifically in complex interventions on animals with serious disorders of the general state or interventions in neurology, ophthalmology, traumatology and orthopaedics or special surgery.
3. Apply ethical values that govern the behavior of veterinarians in clinical practice in relations with other veterinarians.
4. Apply scientific method to professional practice, including medicine
5. Apply the concepts acquired for recognition and manipulation of instruments, manipulation of tissues, haemostasis, drainage and sutures, as well as helping effectively in surgical interventions recognising the typical instruments of surgical specialities (traumatology and orthopaedics, thoracic surgery, ophthalmology, neurology, exotic...).
6. Apply the necessary basic knowledge to deal with an animal with a neurological disorder (small, equine and exotic animals).
7. Be responsible for the medication and daily care of patients (small, equine and exotic animals).
8. Communicate information obtained during professional exercise in a fluid manner, orally and in writing, with other colleagues, authorities and society in general.
9. Defend the ethical values that determine the decision making in diagnostic procedures, medical or surgical treatment or any medical procedure, subject to the rights of animals and their owners.
10. Define the problems found in physical examinations or clinical record of an animal, and produce a list of problems, differential diagnosis and the diagnostic protocol in all clinical specialities and for different species.

11. Determine the ideal positions to obtain radiographic images of the different pathological processes and X-rays and use and apply contrast methods in small, equine, exotic and zoo animals.
12. Explain the general bases of medical and surgical treatments of the main neurological disorders of small and equine animals.
13. Fill in anamnesis and exploration records in all clinical specialities.
14. Handle different autochthonous wildlife species in a safe way for them and the veterinarian.
15. Hold animals when performing examinations, caring or taking samples in a way that causes the minimum possible stress and be able to explain to other people how to do the same.
16. Identify the available laboratory methods to perform hemograms and determine biochemical parameters, advantages and disadvantages of different systems, and recognise the derived complications of treatment and/or obtainment of a sample.
17. Identify the biopsy techniques that can be applied for obtaining samples of different organs and tissues.
18. Identify the conditions in which euthanasia is the only possible option, or the most suitable, depending on the general state of the sick animal and appropriately propose this to the owners.
19. Interpret the results of diagnostic tests (analytical tests, X-rays, echography, endoscopy, PCR, serology...) that are fundamental for advanced diagnosis in the medication and surgery of small, equine and exotic animals.
20. Interpret the utility and complementary diagnostics such as LCR punture, ERG, electromyography procedures, fluorescein angiography, gammagraphy etc.
21. Locate lesions in the nervous system, establish differential diagnoses, diagnostic protocol, treatment and prognosis of small and equine animals.
22. Monitor animals during surgical and/or anaesthetic recovery in different species, including wildlife.
23. Objectively evaluate the pain of sick animals and decide on the analgesia scheme depending on the species, age, location and cause of the pain and the state of the patient.
24. Perform a hemogram and blood test with emergency equipment, and recognise the limitations of these systems and defend interpretations.
25. Perform differential diagnoses and diagnostic plans, taking into account the available complementary techniques applied to all clinical specialities and different species.
26. Plan the most suitable anaesthetic protocol depending on the animal species and the general state of the patient, as well as the type of intervention required.
27. Properly apply knowledge acquired on sedation and pain therapy to interventions in the nervous system, ophthalmology, traumatology and orthopaedics, and special surgery.
28. Properly calculate the doses of medicine for different animal species. Know the limitations of some drugs depending on the species or even the breed, as well as the specific contraindications.
29. Realise complete basic examinations in different clinical specialities (dermatology, neurology, ophthalmology, traumatology and orthopaedics...).
30. Recognise neurological emergencies.
31. Recognise pathological changes in X-rays, echography, endoscopies, CAT and MR and interpret them properly.
32. Recognise personal limitations and know when to ask for professional advice and help.
33. Recognise the adverse effects that different medications can cause and observe established pharmacovigilance legislation
34. Recognise the disorders that require urgent assistance and know how to prioritise them by severity.
35. Recognise the main problems that will require emergency surgery.
36. Recognise the moment when a case needs to be passed to a specialist for diagnosis and/or treatment, and if required, or not, an urgent examination.
37. Show responsibility regarding the need to perform necessary complementary tests on the patient and know how to evaluate the meaning and integrate it in the evolution of hospitalised patients of different species.

Content

LECTURES (Theoretical lectures, virtual, non-synchronous)

Tema 1: The neurologic examination

Tema 2: Lesion localization in the nervous system

Tema 3: Diagnostic tests used in neurology

Tema 4: Monoparesis

Tema 5: Paraparesis

Tema 6: Tetraparesis

Tema 7: Ataxia of the head and limbs

Tema 8: Seizures and epilepsy - Status epilepticus

SEMINARS (Face-to-face seminars)

SESP 1 (2h): Clinical cases videos PARESIS

SESP 2 (2h): Clinical cases videos ATAXIA

SESP 3 (2h): Clinical cases videos PERIPHERAL NERVOUS SYSTEM AND MULTIFOCAL

PAUL (2h): PAUL NEUROSURGERY

PRACTICAL SSESSIONS (10h)

Face-to-face practical sessions:

PLC (2h): ADVANCED NEUROLOGICAL EXAMINATION OF THE DOG AND LESION LOCALIZATION IN THE NERVOUS SYSTEM

CLINICAL ROTATION AT THE NEUROLOGY SERVICE OF THE FHCV(4h)

Virtual alternative practical sessions*:*

Preparation and ressolution of 1 virtual clinical case.

According to the restrictions that sanitary authorities may impose depending on the progression of the pandemics, the contents of the course might be reduced or prioritized.

Methodology

Theory. *Theoretical knowlegde will be taught in lectures that will be online and non-synchronous. The lectures and their explanation will be recorded and placed in the Moodle classrooom. Theory lectures will give students the base for them to enlarge through bibliographic research and complementary reading.*

Lectures will be taught through slide presentations with videos and images within them. The use of these images and videos is only intended to be for self-study. The use of these images and/or videos with other purposes than course study, as well as the transfer (total or partial) of the contents of these sources is strictly prohibited.

There will be a virtual "Doubts" session every four lectures. This session will be online and synchronous and it will be appointed through TEAMS or the most adequate platform so that students can expose their questions or doubts to the teacher.

Seminars. Students are expected to actively participate in seminars, using resources from theory classes, as well as from self-study and research. The Neurosurgery seminar will be a slide presentation with illustrating videos showing the most common types of neurosurgery performed in small animals. In the video seminars, students will be presented videos of real cases (dog or cat) with lesions in differents parts of the nervous system. Students will have to fill out a form, in which they will describe the neurological deficits observed, lesion localization, a differential diagnosis and a prognostic plan for each case seen. All these aspects of the cases will be discussed actively in class after every video-case during the lenght of the seminar.

Advanced Neurological examination practical session. This activity will be performed in the propedeutics lab and will last 2h. The neuirological examination will be performed and explained bythe instructors and deficits that could be found with lesions in different locations will be discussed. After this, students will perform the neurological examination themselves on the dogs that the School has for this purpose.

Clinical Rotation. This practical activity will be at the FHCV, on the days and times the Neurology/Neurosurgeryservice will publish (tuesdays or thursdays, 10 to 14h, weeks to schedule). Students will be present in the Neurology Service appointments and will watch the clinicians' performance during these appointments. After the history has been taken, and the physical and neurological examinations performed, clinician and students will come out of the room and present the case to the Neurology Service supervisor, explaining lesion localization, differential diagnosis and diagnostic plan for each case seen that morning.

It is mandatory to assist to all seminars and practical activities.

Non face-to-face activity. *Preparation and ressolution of 1 clinical case. The teacher will provide the material (history, physical and neurological examination results) of 1 clinical case that students will have to resolve and give back to the teacher individually.*

The proposed teaching methodolody may suffer modifications depending on the restrictions to face-to-face activities enforced by the health authorities.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Clinical rotation	8	0.32	1, 4, 6, 3, 2, 8, 10, 37, 25, 24, 19, 20, 21, 13, 29, 31, 36, 35, 30, 15, 23
Neurological Examination practical session	2	0.08	6, 10, 19, 21, 13, 29, 36
Seminars	8	0.32	1, 27, 4, 6, 3, 8, 37, 25, 19, 20, 21, 13, 29, 31, 36, 35, 30
Theory lectures	13	0.52	1, 4, 6, 10, 19, 20, 21, 29, 31, 36, 30
Type: Autonomous			
Case problem ressolution	18	0.72	6, 10, 25, 19, 20, 21, 13, 29, 31, 36
Self study	23	0.92	1, 27, 4, 6, 2, 8, 10, 19, 21, 29, 31, 36, 34, 30

Assessment

Evaluation will be performed through 3 different types of tests:

- Multiple choice test to evaluate knowledge acquired druing theory lectures. In order to pass, students must obtain a score of 5 over 10 total points. The test is designed to evaluate the theory contents, the ability of the student to correlate concepts, and the students analytical abilities.

Students who do not pass the first test will have a second chance test.

The test score will represent 50% of the total course score (being necessary to obtain a minimum score of 5 in each test).

- Ressolution of a video clinical case to evaluate the theory and practical knowledge acquired during the video seminars. The minimum score required to pass is 5 points over 10, and there will be a second chance test for those student who do not pass the first time.

The score of this test will be 40% of the total course score (being necessary to obtain a minimum score of 5)

- Continued evaluation of the clinical practice. Each student will be evaluated during the clinical rotation based on the following criteria: Evaluación continuada de las prácticas clínicas: cada alumno será evaluado durante el período de prácticas clínicas, teniendo en cuenta los siguientes criterios genenrales:

- Basic knowledge (CT7)

- INterpersonal relationships (CT4)

- Learning / motivation / personal initiative

- Attitude /clinical behaviour

The Neurology Service will use a specific form to evaluate all these aspects. The final score of the clinical rotation will be over 10 points, and a minimum of 5 will be required to pass this part.

The presentation-resolution of a virtual clinical case will be also evaluated.

The score obtained in this part will be a 10% of the total course score.

In order to pass the course, the student must pass ALL the test just described (must obtain a minimum of 5 points in each of them).

Student's assessment may experience modifications depending on the restrictions to face-to-dace activities enforced by health authorities.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continued evaluation of clinical practice	10%	1	0.04	1, 27, 4, 5, 6, 3, 2, 28, 8, 9, 10, 37, 11, 25, 24, 16, 18, 17, 19, 20, 21, 14, 22, 13, 26, 29, 31, 36, 33, 35, 34, 32, 30, 7, 15, 23
Theory test	50%	1	0.04	1, 27, 4, 6, 3, 2, 9, 10, 12, 25, 19, 20, 21, 13, 29, 36, 30
Video cases exam	40%	1	0.04	1, 4, 6, 8, 10, 25, 21, 13, 29, 36

Bibliography

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PLATT S, GAROSI L (2012) Small Animal Neurological Emergencies. Manson Publishing, London, UK.