

Pet dedicated EEG device and telediagnostic platform development to improve the diagnosis of neurological diseases in veterinary medicine



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ELYOPE Project EEG



EEG : background and rationale

The **electroencephalogram (EEG)** is widely and routinely used in **human medicine** to explore and characterize nervous diseases where brain electrical activity is modified such as epilepsies, encephalopathies or comas. **It's an essential tool for the diagnosis, prognostic and treatment of the neurological patient with numerous available devices and interpretation knowledge and competences**

Although pets and humans share the same nervous diseases and dogs are useful animal models for many neurological genetic disease, **to date, no pet dedicated, adapted and easy to use EEG devices are commercialized.** Pet EEG database is lacking (normal and pathologic), veterinary expertise in pet EEG lecture is anecdotic even among veterinary neurology specialists.



Why EEG is not routinely used in pets ?

THE METHOD IS NOT OPTIMIZED FOR PETS

Use of needles: cause pain, difficult to place, need to be taped on the head of the dog, cannot be adjusted during the exam

Use of anesthesia or sedation (at least to place the needles): risk and/or contraindication in severe neurological patient, modify the EEG pattern, decrease EEG sensibility to detect epileptic events

Human devices: Too big, too heavy and complicated devices
THE HUMAN DEVICES ARE NOT ADAPTED TO PETS

OUR SOLUTION, OUR PROPOSITION

A NEW INNOVATIVE METHOD

Pet adaptable EEG headset with specific pain-free electrodes (*non-resistive contactless electrodes*)

A NEW INNOVATIVE DEVICE

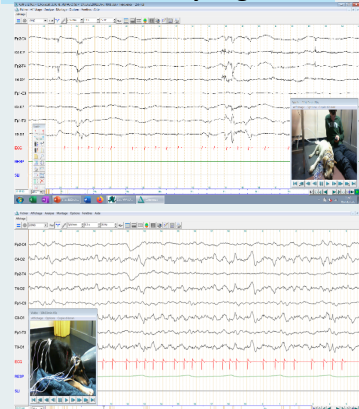
Pain-free

Pet adapted

Allowing EEG to become an easy-to-use routine exam in veterinary ambulatory practice

PROOF OF CONCEPT

20 EEGs on healthy dogs or cats

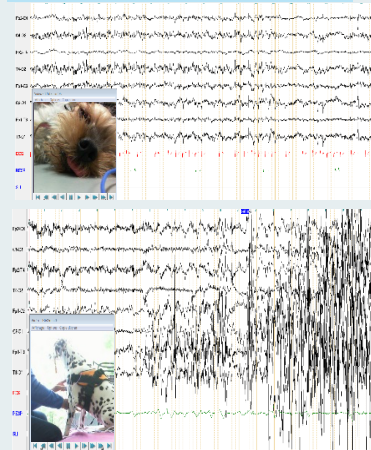


Physiologic

3Y F Sheepdog
Slow waves and K complex

4Y F Labrador
Slow wave and REM sleep

50 EEGs on neurological patients



Pathologic

9Y Yorkshire
Status Epilepticus treated with phenobarbital and midazolam
Spikes and wave at the EEG despite no movement and coma
NOT CONVULSIVE STATUS EPILEPTICUS ALLOW TO ADJUST TREATMENT

1,5Y pregnant Dalmatian
Permanent clonic ears movements
Spikes at the EEG
FOCAL MYOCLONIC EPILEPSY ALLOW TO INTRODUCE ANTI-EPILEPTIC TREATMENT REMISSION

EEG DATABASE AND EEG lecture EXPERTISE DEVELOPMENT : a multidisciplinary team work

Proof of concept

Ag/AgCL Electrodes use
+ Pet adapted Head set (Helmet prototype) development,
EEG device Test on pets
Telediagnostic Platform creation (EEG exam download)
EEG lecture and interpretation

Full hardware set up

Industrialisation of a new EEG device (electrodes and helmet)

Holter EEG device development

Partnership

Financial Support

Expertise development

Pet EEG database development (Healthy and pathologic (real clinical cases demonstrating EEG contribution to veterinary diagnostic))

National and International

Commercial development (Veterinary Market + Research and pharmaceutical Market)

A complete and Pet adapted Product (helmet + electrodes + Holter device)

A service (training of EEG use, Telediagnostic by an expert using a dedicated Platform)

An innovative, easy to use complementary exam for veterinary medicine to facilitate neurological diagnosis and improve therapeutic care
 An essential tool for medical research (epileptology, pharmacology, toxicology)

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