THE GLOBE

Newsletter of the International Society of Veterinary Ophthalmology
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Editor
Claudio Peruccio
Co-Editor
Kristina Narfström
Production Manager
Sten Wiechel

Editorial

Veterinary ophthalmology and the international scene

The international crisis affecting all countries gives us an occasion to talk about priorities. What is considered more important depends upon the individual perspective and many political, cultural and social conditioning factors. This is the reason why the priority may be an economical issue, the need to support our personal identity or assert our values; but what are we really loosing more in this chaotic period of the story of humanity?

Economy. Economical depression is the main concern all over the world and every human activity is now conditioned by money shortage. In wealthy western countries people fear to loose what can be considered superfluous by most human beings struggling every day to find the way to survive.

Identity. The recognition of our origins, culture, traditions is becoming apparently less important in today's multicultural world. The exposure to international environments gives a chance to overcome local educational barriers but, this way, aren't we loosing something ?

Values. All of us have values we refer to, learnt through family education or simply acquired by experience. They can partly vary country by country but ethical values are a common property we share. How much the economical depression and the loss of identity are affecting them ?

Sentiments and emotions, linking people to their pets, are powerful antidotes to counteract the poisons of crisis. This is the reason why we still have an important place in the landscape of professional activities, we, as veterinarians, play a unique social role; Veterinary Ophthalmologists in particular have to deal with sight, the main human sense, this gives us a special position from the point of view of our clients and makes the economical issue a less critical one.

Claudio Peruccio

Letter from the ISVO President

In this day and age, it has become more common to view the nations of the world as a single community, as international borders become less significant and an increasingly mobile population views itself as 'citizens of the world' – as much as we will always identify with our home country. It is clear from the success of past international congresses and also the invitations that appear in this issue, that as veterinarians *we recognise* the importance of international exchange, offering regular renewal of personal contacts and shared interests.

Our numbers are by no means as large as in human ophthalmology, yet as qualified specialists or practitioners with a serious interest in veterinary ophthalmology, we deal with an equally mobile client base as owners, breeding animals and pets move from country to country. This forces us to think and act as 'citizens of the world', as we also adapt to changing sets of needs.

The upcoming scientific meetings of the ACVO (Boston, USA October 2008); the ECVO and ESVO (Copenhagen, Denmark June 2009) and the ISVO / CLOVE / CBOV to be held in conjunction with the WSAVA Congress in Sao Paulo, Brazil in July 2009 will provide excellent opportunities for colleagues from both the Northern and Southern Hemisphere to continue this dialogue in an atmosphere of great camaraderie, as we work to achieve greater international cooperation with the sharing of new knowledge on the eye, across all species.

The International Society of Veterinary Ophthalmology seeks to provide a coordinating and facilitating role, especially in those areas such as canine eye certification where it is important that we try to harmonise the high standards we

have set so far, and continue to strive for on an international scale. As ISVO President, I encourage everyone with an interest in veterinary ophthalmology to attend *one, two* or *all three* of these excellent forthcoming meetings!

Maurice Roze

The Scientific Editorial

A number of scientific topics of interest to our readers are under discussion on the international contest. This is the reason why we decided to start publishing a second editorial dedicated to "HOT CURRENT TOPICS" under the responsibility of the co-editor, KRISTINA NARFSTRÖM.
This time Kristina is focusing on PLR interpretation, a matter of recent discussion that needs further studies and knowledge to be fully understood.

Comments in regards to the melanopsin-containing ganglion cells and the use of chromatic stimuli for interpretation of retinal disease processes

I enthusiastically read about the melanopsin containing ganglion cells for the first time about 6 years ago. With my special clinical and scientific involvement in the field of retinal diseases and as being one of the lecturers at the ACVO Basic Science Course I included some basic facts in my lectures about these cells and have talked about the implications in regards to retinal disease processes. Particularly since the news came out about "the 3rd type of photoreceptor", I've personally started to study the pupillary light reflexes (PLRs) with an increased interest when evaluating vision and retinal function and tried to standardize my procedures in order to obtain a further understanding of what is really going on in the retina under various disease conditions.

The group of diseases that I've focused on are the rdAc cat model (primarily Abyssinian cats) with slowly progressive rod cone degeneration, the RPE65 null mutation dog (primarily Briard dogs) with congenital retinal dystrophy and night blindness, and various dog breeds with ceroid lipofuscinosis (primarily American bulldogs, English setters and Longhaired dachshounds) with neurologic disease including progressive retinal and/or cortical blindness. Affected individuals in regards to these diseases have varied changes in their PLR responses. Please note that the above mentioned groups of animals are well characterized through clinical and laboratory methods, also on the molecular level. Thus, the respective gene defects and mutations have been discovered, and we have now the unique possibility to directly correlate PLRs with affected status and even stage in the retinal disease process.

Recently, I've become involved in a project with Dr. Stewart Thompson, a scientist in Dr. Edward Stone's laboratory at the University of Iowa researching the basic physiology of the visual processes, including accessory visual systems such as the PLR. Our goal is to use a group of the above mentioned animal models in further studies of the visual system focusing on objective measures for the use of vision. Dr. Thompson and I have been discussing some of the recent questions posted on the ACVO list serve. I would like to share some scientific aspects with the readers of the Globe in regards to this discussion and also make a few personal comments.

The retina with its visual pathways is immensely complex and becomes even more so when affected with various disease processes (please refer to Dr. Robert Marc's work). We also know that the retina deals with several basic visual pathways simultaneously (not to mention the further central processing that occurs). Much studied are the scotopic and the photopic pathways, on- and off- pathways, center-surround organization and effects of specific retinal cells such as starburst amacrine cells. All of this serves discrimination of hues and color, fine resolution point mapping and many other discrete visual capabilities. Together these provide useful form vision over varied visual conditions.

The melanopsin containing ganglion cells bring in still another factor to the already complicated cellular interactions of the retina. It is therefore hard to talk about "a direct driving input" from the melanopsin containing ganglion cells, since the physiology of these circuits is far from defined. *In vitro* studies have been informative, but this work is ongoing [1-3]. Knock-out mice models for specific retinal diseases have also been used, elegantly showing that a complete lack of classical photoreceptors result in PLR's but only when high intensity light is used for stimulation [4]. By contrast, a lack of melanopsin function results in reduced PLR responses to higher levels of light [5]. Lack of both rod and cone photoreceptors and melanopsin containing

ganglion cells, on the other hand, result in completely non-responsive PLRs [6].

In the aforementioned list serve discussions it has been stated that "photons of light hit the photosensitive pigment melanopsin in the pupillary driving ganglion cells (approximately 3-5% of total RGC number depending on species) and melanopsin activation results in the slow depolarization of the axonal membrane and pupil constriction". The assumed physiology mentioned here is from isolated melanopsin containing cells, but ALL ganglion cells receive rod and cone input. Further, the melanopsin containing ganglion cells provide input to over 15 CNS nuclei and underlie many different illuminance detection tasks. Reflecting that variety, there are at least 3 types of melanopsin ganglion cell [7] and more variants of how rods and cones provide input to these specific cells [8, 9]. This means that sometimes the extrinsic stimulation is additive, sometimes inhibitory, sometimes strong, and sometimes weak.

In the pupillary light reflex the rod, cone and melanopsin input systems seem to act in an additive fashion - rods provide low illuminance sensitivity, cones high illuminance sensitivity, and melanopsin activation seeming to provide sustained and high illuminance responses either by counteracting light adaptation of rod/cone input, or by driving the response with the slow but sustained activation to light seen in isolated melanopsin containing ganglion cells.

On the same list serve there has been talk about "poor" pupillary responses to red light and "good" pupillary responses to blue light. This is a very simplistic way of evaluating the processes that occur and the term "good" appears misused. A loss of rods or a generalized loss of rods and cones result in a >3-log unit loss of illuminance sensitivity [4]. Thus, needing over 1,000 times the light for an equivalent response is not really "good", is it? Theoretically, the PLR presentation should be interpreted as follows:

1. A normal response to blue light and severely reduced response to red light show a loss of long wavelength sensitive (LWS) cone input.
2. A severely reduced response to blue light with a non-recordable response to red light show a loss of both rods and cones.
3. Equally affected red and blue responses show that ganglion cells (or only the melanopsin containing ganglion cells) are affected.

Other "insights" placed on the ACVO list serve: "melanopsin is activated by light with the maximum peak spectrum at 480 nm (blue light), and sensitivity spectrum is slowly declining to the range of 520-570 nm (depending on species). Light with the wave length over 600 nm (red light) can not activate melanopsin and will not result in the pupil constriction based on melanopsin response. Since end sensitivity spectrum in rods and cones is well above 600 nm, use of the red light will result strictly in activation of rods and cones". These temporal characteristics of the stimuli and the relative differences in sensitivity are reasonable, however, with the qualifier that they are not conclusive with our current understanding of the underlying retinal circuitry and that the absolutes of the statements are not true.

The relative sensitivity of an opsin changes with wavelength in a characteristic way, whether for rod-opsin, cone-opsin or melanopsin. For canines the long wavelength cone opsin has a peak sensitivity at 550 nm [10], the rod around 510 nm [10] and melanopsin around 480 nm (the latter is, however, as of yet not fully elucidated). In addition, the cells have different illuminance response properties (rods respond to dim light, cones to bright and melanopsin to the amount of light over time so they will respond to dim light if it is sustained) [11]. So, we can conclude that melanopsin will react to red light if it is bright enough and sustained for a long enough time. The response at 480 nm is dominated by rods at low illuminance but would include a significant long wavelength sensitive cone input at higher illuminances.

Finally, if chromatic light is to be used for PLR studies, it is important to take into account species differences in wavelength maximum sensitivities for each type of photoreceptor. For example, to use 630 nm for red light is treating the dog like a human as to sensitivity for the canine long wavelength sensitive cone visual pigment.

It is true that regardless of retinal pathway(s) used, a specific population of retinal ganglion cell axons will carry the information further to the brain. So if there is a disease process affecting the optic nerve axons directly (optic neuritis, tumor, compressive or traumatic optic nerve lesion), the degree of deficit in PLR response should be identical across wavelengths, even though full-

field ERG stimulation is usually normal. However, with diseases localized to the retina the processes become more complicated as previously described depending on the stimulation used. For example, in sudden acquired retinal degeneration patients (SARDs), rod-cone activity is absent and there are usually no recordable electroretinographic (ERG) responses to full-field high intensity white light stimulation under scotopic conditions. In theory, red light PLR stimulation should give no response while blue light should activate the melanopsin containing ganglion cells and give rise to PLRs but with slower responses and reduced illuminance sensitivity. In immune-mediated retinitis (IMR) patients very similar results are observed (in theory!) but the ERG (similar conditions as above) is usually normal or at least recordable. In progressive retinal atrophy (PRA) red light PLR stimulation usually give no responses in moderately advanced stage of disease since cone photoreceptors are often affected at that stage, while blue light should give a response, indicating the presence of functional melanopsin containing ganglion cells. ERGs, under similar conditions as above are reduced or non-recordable. For ceroid lipofuscinosis (CLN) patients, theoretically the response to PLR red light stimulation is variable depending on degree of involvement of the rod and cone photoreceptors, and PLR testing using blue light stimulation is non-recordable, either due to changes in the melanopsin containing ganglion cells, or the form of extrinsic input. ERGs show variable results in CLN patients depending on variations in outer retinal involvement, one factor being molecular genetic type of disease. In broad terms this is what may be found in relation to PLR testing (and ERGs) but, as previously pointed out, until more data are available, the results may be difficult to interpret. ANY interpretation should be done with caution.

In summary, testing of the PLRs can be useful if utilized in an informed way and not over-interpreted. The technique should be seen as an adjunct to other clinical diagnostic methods and should not be seen as a quick screening method that can replace other needed and well established diagnostic methods such as thorough funduscopic exams, standardized full field ERGs, ultrasound and magnetic resonance imaging techniques. Broad PLR reductions using white light or chromatic stimulation should be seen as a diagnostic indicator if the circumstances seem reasonable, but by itself the method is not conclusive.

Kristina Narfström

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Coming Events

2008 ACVO Annual Conference
October 15-18, 2008
Boston, MA, USA
Westin Copley Place

Join us in Boston to earn 15-20 CE credits and experience the following and more. . .

The hip neighbourhood of Back Bay makes the perfect setting for The Westin Copley Place, Boston, an urban retreat in the heart of downtown, conveniently situated within walking distance of a wealth of trendy nightclubs and upscale shops.

Dining at The Westin Copley Place provides variety and quality. Whether you prefer Boston's renowned seafood, a hearty steak or some light, Mediterranean fare there's a great place to relax after meetings or touring the city.

The Westin's fully equipped facilities provide opportunities to get fit in their Health & Fitness Center, stay connected with the help of their Business Center, or unwind in their full-service Grettacole Spa®. Whether it's for fun or necessity, it's all at your fingertips.

Go for a stroll through historic streets and look for landmark Boston attractions such as the Freedom Trail, the Prudential Center, and Boston Common. Relax while gazing at the Charles River or visiting the Boston Public Garden.

Capture a glimpse of America's past while you explore the historic streets of Boston.

General Conference Schedule

(tentative as of April 15, 2008)

Tuesday, October 14

8am-5pm	Exam Committee
Noon-6pm	Genetics Committee
4pm-7pm	Board of Regents

Wednesday, October 15

8am-5pm	Exam Committee
8am-5pm	Board of Regents
8am-5pm	Genetics Committee
9am-Noon	Residency Committee
9am-1pm	Governance Committee
9am-5pm	Credentials Committee
Noon-6pm	Practice Management Course
5pm-10pm	Ad Hoc Committee
6pm-8pm	Opening Reception/ Registration
8pm-10pm	VOTS Reception

Thursday, October 16

6am-10am	Exhibits Set-up
6:30am-7am	Posters Set-up
7am-8am	Continental Breakfast
7:30am-5pm	Registration
8am-5pm	VOTS Registration & Meeting
10am-10:15am	Break w/ Exhibitors
10am-7pm	Exhibits Open
7am-5pm	Posters (authors Noon-1:30pm)
8am-Noon	Residents' Forum
Noon-1:30pm	Lunch (on your own)
12:30pm-2pm	Journal Editorial Board Lunch
Noon-1:30pm	New Diplomates' Meeting
1:30pm-5pm	Scientific Session
3pm-3:15pm	Break w/ Exhibitors
4:30pm-6:30pm	Vitreous Society
4:30pm-6:30pm	Prospective Residents/Mentors
5pm-7pm	Exhibitor's Reception

Friday, October 17

6:30am-8am	Roundtable discussions & breakfast (additional fee)
7:30am-8:30am	Continental Breakfast w / Exhibitors
8am	Registration
8am-5pm	VOTS Meeting & Registration
7am-5pm	Exhibits Open
8:30am-Noon	Scientific Session
10am-10:15am	Break w/ Exhibitors
Noon-2pm	Lunch (on your own)
2pm-5pm	Scientific Session
3pm-3:15pm	Break w/ Exhibitors
6pm-9pm	Friday Evening Gala (tickets required)

Saturday, October 18

6:30am	Fun Run/Walk (tickets required/ refreshments)
6:30am-8am	New Diplomates' Breakfast
7am-8am	Continental Breakfast w/ Exhibitors
8am	Registration
8am-Noon	VOTS Meeting & Registration
8am-6pm	General Pracitioners' course (additional fee)

7am-2pm	Exhibits Open
8am-11am	Scientifi c Session
10am-10:15am	Break w/ Exhibitors
11am-Noon	Memorial Lecture
Noon-1:30pm	Lunch (on your own)
1:30pm-3:30pm	Residents' Workshop Virtual Cataract Lecture
2pm-4pm	ACVO Business Meeting
2pm	Exhibits Close
2pm-5pm	Exhibits Dismantle
3:45pm-5:45pm	Resident's Workshop Virtual Cataract Lab (additional fee)

Sunday, October 19

7am	Registration
8am-5pm	Virtual Cataract Lecture/Lab (additional fee)

Residents' Workshop

"Future trends in Canine Lens Extraction and the next frontier in surgical education for cataract surgical training"

Who should attend?

All surgeons in residency training. This will allow them to sharpen and expand their manual dexterity skill sets and learn and master new techniques. Interns and general practice veterinarians are welcome to attend the lecture. However, the lab will admit residents only. The lecture portion of this workshop will be free of charge.

Course Description

EYESi is a sophisticated simulator for intraocular surgical training which allows essential surgical skills to be mastered without ever risking the safety of a patient. Surgical proficiency is a demanding skill to acquire and then maintain at optimal performance levels. Every aspiring surgeon must master all at once coordinated use of both hands and both feet to control various microsurgery instruments and the microscope. Add to these physical tasks the cognitive challenge of grasping the dynamic environment caused by a phaco system. Reaching expert status requires a "deliberate practice" methodology be applied to one's training. Elements like repetitive practice, practice at a challenge level suitable for the one's skills level, objective and immediate feedback collectively ensure that practice over time results in surgical proficiency. The EYESi simulator will help all cataract surgeons, new and experienced, to reach the next level in their skills development. The didactic session of the EYESi simulation course for residents will cover an introduction to the role of simulation in surgical training for cataract surgery with EYESi and the basics of phacoemulsification and phacodynamics for all resident levels.

Speakers

Course instructors are Diplomates of the ACVO; Drs. Carmen Colitz, Mark Nasisse, and David Wilkie.

Course Fee

There is no charge for the lecture portion of this course. A $50 fee is required to reserve your spot in the lab (limited to 60 individuals). Includes note when appropriate.

Memorial Lecture - Dr. Paul S. Koch

"Cataract Surgery in Two-legged Patients: What to Do When You Don't Get What You Want"

Description

Happily, most cataract operations are fairly routine and predictable. My standard operative report is preprinted and usually I just need to sign it. But not every operation is routine, so there is a space on the form for what we call "Variations, Complications, and Interesting Situations." If one or more of them should pop up I write a detailed description of the occurrence in that space. This presentation comes from those handwritten notes. I will be showing video clips from cases that needed a more detailed operative report. Each clip will show a variation in a technique, a surgical complication, or an interesting situation. For 20 years I filmed every operation I performed, some good, some adequate, and some that still cause me to cringe. For this presentation I will select some of my favorite cases. Some will be unique, and some a twist on old themes, but every one of them will be something that happened to me (sigh).

Biography

Dr. Paul Koch is a Founder and the Medical Director of Koch Eye Associates. His specialty is Cataract, Lens Implantation, and Refractive Surgery. Dr. Koch has been named one of the Top 100 Ophthalmologists and one of the Top 15 Cataract Surgeons in North America by *Ophthalmology Times*. He has been cited in each issue of the *Best Doctors in America*. He has won many awards including the Mericos H. Whittier Foundation's Lifetime Achievement Award, the American Academy of Ophthalmology's Honor Award, the David Kelman Foundation's Golden Hands Award, the Irish-American Ophthalmology Society's Top-Gun Phaco Award, the Hoffer Award (twice), and the International Film Festival of the American Society of Cataract

& Refractive Surgery Award (four times). He was in the inaugural group of inductees into the Bishop Hendricken High School Hall of Fame. Dr. Koch has written seven books on eye surgery, six of them about cataract surgery, which are the standard reading materials for residency programs in the US and abroad, and one about corneal refractive surgery. He has also written many journal articles, book chapters, and specialty editorials. He is Chief Medical Editor of *Ophthalmology Management Magazine*. He has helped popularize many advances in cataract surgery, including techniques that permit surgery to be performed comfortably without anesthetic injections, and with vision recovery beginning only a few minutes after the operation is completed. Dr. Koch was one of the first refractive surgeons in America performing keratomileusis (the original manual technique for LASIK) in 1979, keratophakia in 1980, and radial keratotomy in 1983. (He is also a radial keratotomy patient himself.) Now he performs laser refractive surgery for myopia, hyperopia, astigmatism and soon, pending FDA approval, presbyopia. Dr. Koch is New England's most experienced laser surgeon. He is also among the most experienced refractive lens implant surgeons in America. These implants are used for patients who have extreme refractive disorders and are implanted at his surgery center in Warwick. He was one of the Clinical Investigators for the Crystalens, the first FDA-approved accommodating intraocular lens. Dr. Koch grew up in West Warkwick, but now lives in East Greenwich with is wife, Joanne, and children Katie and Paul.

Virtual Cataract Surgery Lab

"Future Trends in Canine Lens Extraction and the Next Frontier in Surgical Education for Cataract Surgical Training"
THIS COURSE IS FULL AND WILL NOT ACCEPT ANY MORE REGISTRATIONS.

Practice Management

It's all about profit, practice value, and retirement planning !

Course Description

This year's practice management course will take place Wednesday, Noon-6pm. There has been so much interest in the past years' courses that we have decided to expand it to a half day program. The course will include three speakers in two sections. First, Dean Firmani and J. Truitt Smith will present on "New Small Business Retirement Plan Options", 12pm-2pm over lunch. Next, Dr. Dick Goebel will cover "Focus on Profit and Practice Value", 2pm-6pm.

"Specialty Day of Ophthalmology for General Practitioners"

The American College of Veterinary Ophthalmologists invites general practitioners to attend its third annual "Specialty Day of Ophthalmology for General Practitioners".
Topics and speakers outlined below.

Tentative Schedule

Speaker Time Topic

6:30am-7:30am Registration
6:30am-7:30am Continental Breakfast
7:30am-8:30am Dr. Ken Abrams "It's Not about the Toys: How to do an efficient AND economical eye exam!"
8:30am-9:45am Dr. Steve Hollingsworth "Neuro-ophthalmology: What Pupils Can Teach Us"
9:45am-10am Break with Exhibitors
10am-11am Dr. Charles Stuhr "Ocular Emergencies"
11am-12:30pm Lunch (opportunity to visit exhibitors)
12:30pm-1:30pm Dr. Charles Stuhr "Major Tips for Minor Surgeries"
1:30pm-2:30pm Dr. Todd Hammond "The Use of a High Frequency Radiosurgical Unit in Veterinary Ophthalmology"
2:30pm-2:45pm Break with Exhibitors
2:45pm-3:45pm Dr. Stacy Andrew "Anterior Uveitis - Everyone Gets It"
3:45pm-4:45pm Dr. David Whitley "Non-ulcerative Keratitis"

Who should attend?

General practice DVMs, residents/interns, veterinary students and technicians are welcome to attend, but education will be targeted toward veterinary general practitioners. Enrollment will be based on a first-come, first-served basis. You do not have to register for the general conference in order to attend, but why not enjoy the entire conference?

Course Fee

Receive eight (8) hours of continuing education, course proceedings, lunch, contact with ophthalmic product vendors, breaks, and a reduced rate for the general conference if you wish to attend. All this for only $225!

$$$ Save money!

Receive eight (8) credits of targeted continuing education, in your "back yard". Eliminate excessive travel

expenses by attending this world class education so close to home. Also receive a reduced rate for the general conference, if you wish to attend the ACVO conference.

Speakers

Speaker and topic information is in order of presentation. All speakers are board certified veterinary ophthalmologists. Expanded biographical information will be available at www.acvo.org/meetings/2008/index.htm.

- **Dr. Ken Abrams**

Lecture Topic

"It's Not About the Toys: How to do an efficient AND economical eye exam!"

Brief Description

This presentation will explain how we can diagnose most ophthalmic diseases with basic tools. We will review the importance and technique for Schirmer tear test, fluorescein staining methods, examination of adnexa, cornea, anterior chamber, lens, vitreous, and fundus with only minimal and inexpensive equipment.

- **Dr. Steve Hollingsworth**

Lecture Topic

"Neuro-ophthalmology: What Pupils Can Teach Us"

Brief Description

This talk will present a systematic method of assessing pupillary abnormalities including miosis, mydriasis, anisocoria, dyscoria, and pharmacologic testing. Topics will be presented from a practical, clinical perspective.

- **Dr. Charles Stuhr**

Lecture Topic

"Ocular Emergencies" and "Major Tips for Minor Surgeries"

Brief Description

"Ocular Emergencies": The list of true ocular emergencies are shorter than you might think. This lecture will discuss this limited list of emergencies, how to identify them and what you may want to do for treatment or palliative care until referral. We will also discuss entities that may not be truly emergent and why.

"Major Tips for Minor Surgeries": Lid tumor excision, cherry eye repair, staple tarsorrhaphy. . .these and other surgeries that don't require expensive tools except for good magnification and a steady hand will be presented. Often it is the little tips that can make a big difference and hopefully a pearl or two will be buried into this lecture of common surgery performed in both specialty and general practice.

- **Dr. Todd Hammond**

Lecture Topic

"The Use of a High Frequency Radiosurgical Unit in Veterinary Ophthalmology"

Brief Description

The material covered in this lecture will discuss the instrumentation, machines and electrodes, radiosurgery theory and the benefits of using radiosurgery. We will discuss the principals needed to control lateral heat. I will show slides using radiosurgery in surgical procedures: entropion, enucleation, replacement of the third eyelid glands, treatment on indolent corneal ulcerations, folliculosis, imperforate lacrimal puncta, eyelid tumors, distichiasis and symblepharon.

- **Dr. Stacy Andrew**

Lecture Topic

"Anterior Uveitis - Everyone Gets It"

Brief Description

This presentation will explain the ophthalmic anatomy of the uveal tract and why/how inflammation happens. Causes, differentials, diagnostic tests, and treatments available for uveitis in dogs, cats and horses will be discussed.

- **Dr. David Whitley**

Lecture Topic

"Non-ulcerative Keratitis"

Brief Description

Please check the ACVO meeting web site for details when available.

New in 2008!

Learn and share with colleagues. Participate in 'Roundtable Discussions' & Breakfast

Interactive Format

Join your colleagues for roundtable discussions during breakfast Friday, 6:30am-8am. Attendees will be able to choose tables with posted topics where doctors with similar interests can share ideas, experiences, and techniques on these issues. After a set time participants will rotate to a new table with new topics of their choice. A moderator will explain and time the process on site.

The number of topics and tables will depend on the number of registrants. Some possible topics include:

- Equine Intraocular Surgery
- Resident Training
- New Non-steroidal Antiinflammatory Medications
- Progress of Therapies for Inherited Retinal Degenerations
- Status of Genetic Testing for Retinal Disorders in Dogs
- Advances in Anti-viral Medications
- Advances in Ocular Imaging
- Immunologic Advancements Related to Corneal Transplantation in Dogs and Cats.

- Advanced Diagnostics i.e. PCR for Infectious Diseases
- Understanding Molecular Techniques Commonly Seen in Journal Articles
- Less Traditional Species and Their Problems
- Feline Herpesvirus - Many Anecdotally Discussed Drugs, Minimal Actual Published Supportive Data: What is the most reasonable, successful and rational approach?
- Retinal Reattachment Surgery - New Techniques and Updated Prognoses
- Canine Glaucoma - Treatment Protocols That Seem to Work "Much of the Time"
- Exposure Keratopathy Syndrome in the Brachycephalic Breeds: Canthoplasties, Cryotherapy, Medical Therapy Forever, Etc. Why Can't We "Cure" This Problem Versus Hope for "Control"

Roundtable discussions are scheduled to begin approximately one to one and a half hours prior to the general sessions on Friday.

Who should attend?

The roundtable discussions will be open to all interested ACVO attendees. There will be up to 100 seats available on a first-come first-served basis.

Course Fee

The $40 registration fee includes a plated breakfast and discussion with your colleagues.

Group Activities and Events

Fun Run, Walk or Stroll

Remember to sign up for the Fun Run/Walk scheduled for Saturday morning. The price is only $10/person and includes a T-shirt and refreshments and a run along the Charles River. Distance of the run is approximately 3-5 miles. You may walk or run, whichever you prefer. Each year, if the course makes a profit, these monies are distributed to a local charity to be selected after the conference.

Friday Evening Gala - ***New Format!***

Mingle with ACVO attendees while enjoying heavy hors d'oeuvres and entertainment. The gala will be held on Friday from 6pm-9pm. The beginning of the event will include mingling and hors d'oeuvres; entertainment will be provided during the latter portion of the evening. Tickets are $30 and include two beverage tickets (beer, wine, soda or bottled water).

Vision for Animals Foundation Auction

Past ACVO Vision for Animals Foundation auctions have been successful due to the generosity of donors and buyers. Help us prepare for another successful auction at the 2008 conference by making a donation. The Foundation's goal is to raise enough money to develop a self-funding grant program. It has already funded more than $125,000 in research grants in the past five years! You can make a personal donation or your company may participate by donating an item for the auction. This donation is tax-deductible. Cash and/or personal donations are also welcome. If you would like to donate, please contact the ACVO offi ce at 208-466-7624, or make a donation online at www.visionforanimals.org.

Meeting Contact Information & Conference Registration

Stacee Daniel
ACVO Executive Director
Ph: (208) 466-7624
Fx: (208) 466-7693
office08@acvo.org

WSAVA/ISVO/CLOVE/CBOV Joint Meeting
21-24 July 2009
Sao Paulo, Brazil

We are wating for you in Brazil next year.
Don't forget to book it in your schedule.
Peter Bedford, Kristina Narfström, David Maggs and Alejandro Bayón were invited and are coming to Brazil to give us lectures. The topics are: "Eye and Vision in the Vertebrates" (P. Bedford); "Inherited Retinal Diseases" (K. Narfström); "Herpes Virus" (D. Maggs) and "Eye and Vision in the Exotic Animals" (A. Bayón). Moreover, time to Free Communications and Societies meetings will be offered. The WSAVA congress will be held from 21 to 24 July 2009. The WSAVA/ISVO/CLOVE/CBOV will be held in this period, in just two days, inside the WSAVA congress (a joint meeting).
Details concerning registration, accomodation and place of the Meeting are available at:
http://www.wsava.org/Congresses.htm

Jose Laus

WSAVA/ISVO/CLOVE/CBOV 2009
Program

First Day

In the morning

OPEN CERIMONY:
José Laus (Scientifc Committee Representative)
Maurice Roze (ISVO Representative)
Orestes Leites (CLOVE Representative)
Paula Galera (CBOV Representative)

Magrane Memorial Lecture (2 hours)
"EYE AND VISION IN THE VERTEBRATES"
Speaker: Peter Bedford (UK)
Moderators: Ellen Bjerkas (Norway)
Robert Munger (USA)

Coffee break

WSAVA Lecture (2 hours)
"**HERPES VIRUS**"
Speaker: David Maggs (USA)
Moderators: Maurice Roze (France)
Arianne Oriá (Brazil)

In the afternoon

Free Communications (4 hours)
Moderators: Paula Galera (Brazil)
João Pigatto (Brazil)

Second day

In the morning

CLOVE Lecture (2 hours)
"EXOTIC ANIMALS OPHTHALMOLOGY"
Speaker: Alejandro Bayón (Spain)
Moderators: Pablo Sande (Mexico)
Orestes Leites (Uruguay)
Coffee break

CBOV Lecture (2 hours)
"INHERITED RETINAL DISEASES"
Speaker: Kristina Narfström (USA)
Moderators: Paulo Barros (Brazil)
Jacek Garncarz (Poland)

In the afternoon

Societies Meetings
ISVO Board Meeting (1hour) - from 15h to 16h
CLOVE Board Meeting (1hour) - from 16h to 17h
CBOV Board Meeting (1hour) - from 17h to 18h

ECVO-ESVO- DSVO Conference
Copenhagen, Denmark,June 3rd – June 7th 2009
Invitation to the European Veterinary Ophthalmology Meeting

Denmark is the host of the European Veterinary Opthalmology Meeting from June 3rd – June 7th 2009.

On behalf of the ECVO, ESVO, DSVO and the organising committee I would like to invite you to Copenhagen. The congress will take in the very heart of Copenhagen.

The framework of the congress is nearly finished, and as the previous organizers, we have tried to make a very exciting scientific and social programme.

We want you to keep an eye on this website.

Soon you can find all the information about the program, when the registration opens, deadlines for abstract submission, social activities etc.

We hope you will fill out the framework and make the congress a real success.

See you in wonderful Copenhagen.

Susanne Kaarsholm
President DSVO

For further details please contact: www.esvo.org

Memo

September 13, 2008
North East Veterinary Ophthalmic Society (NEVOS) Animal Medical Center, New York NY, USA

October 15-18, 2008
ACVO Annual Conference Westin Copley Place, Boston MA, USA

October 20-31, 2008
European School for Advanced Veterinary Studies, Ophthalmology I, Luxembourg, LUXEMBOURG

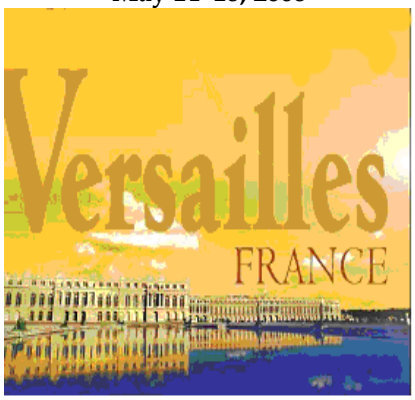
July 9-10, 2009
WSAVA/ISVO/CLOVE/CBOV 2009
Sao Paulo, Brazil

June 3- 7 2009
ECVO-ESVO- DSVO Conference
Copenhagen, Denmark

November 4-7, 2009
ACVO ANNUAL CONFERENCE
Chicago, IL, USA

From the Congresses

From the ECVO-ESVO-AFOV-AFVAC-GEMO-SFEROV Conference, Versailles, Paris, France, May 14–18, 2008



To let our readers have a taste of the Scientific Content of the meeting, a few selected abstracts from the Proceedings Notes have been included in this issue of The Globe.

REVIEW OF THE MEASURING PRECISION OF THE NEW MEIBOMETER® MB550 THROUGH REPEATED MEASUREMENTS IN DOGS

P. BENZ[1], A. TICHY[2], B. NELL[1]

[1] *Department of Small Animal and Horses, Veterìnary University of Vienna, Austria*

[2] *Department of Natural Sciences, Veterinary University of Vienna, Austria*

Purpose: Meibometer is a device to measure the delivery rate of lipids on the lid margin. The meibometer consists of a photometer unit and a tape loop. The tape loop is held on the slightly retracted lid margin for 5 seconds. After 1 minute of air drying the tape loop is applied to the photometer unit. The results are displayed on the device or with the new Meibometer on the computer. The aim of the study was to determine the measuring precision of the new Meibometer® MB550 (Courage-Khazaka electronic GmbH, 50829 Cologne), which is linked to a computer, by repeated measurements in dogs by different examiners.

Methods: Two investigators measured the lipid rate on the lid margin in 10 healthy beagle dogs for 10 days. One examiner measured the right eye and the second examiner the left eye for 5 days. After 5 days, the examiners switched the eyes to be measured.

Results: Mean meibomium lipid level ± SD in the right and left eyes of 10 dogs in 10 days was 211 ± 48 MU and

DUPLICATION OF DESCEMET'S MEMBRANE IN DOGS EYES: A RETROSPECTIVE STUDY

C. KAFARNIK, R.R. DUBIELZIG

Comparative Ocular Pathology Laboratory Wisconsin, Pathobiological Sdences, School of Veterìnary Medicine, University of Wisconsin-Madison, 2015 Linden Dr., 53706 Madison, USA

Purpose: To describe the morphology of a previously undescribed duplication phenomenon of the canine Descemet's membrane (Dm) in relation to signalment, history and ocular disease status.

Methods: 66 canine eyes from the Comparative Ocular Pathology Laboratory of Wisconsin database were retrieved. Clinical information regarding signalment, the duration and nature of corneal disease, ocular and systemic history were extracted from the submission data. The following morphological criteria were recorded: anatomic location, diameter (um) of corneal layer (CL, adjacent to the cornea) and anterior chamber layer (ACL, adjacent to the anterior chamber) of Dm, matrix material in between Dm portions, corneal endothelial features, Dm overgrowth on the iris surface, further corneal and intraocular features. Ali cases were stained with HE and PAS, 14 cases were stained with Cytokeratin AE1/AE3 (CK).

Results: 26 different breeds and 3 mixed breeds were included. The mean age at enucleation was 9.19 ± 2.91 years. When reported, the median duration of clinical signs, before enucleation in 51 cases was 17 months, with a range of 0.1-84. In 22/66 eyes, the duplication was multifocal in 7/66, continuous. In 19/66 the duplication was only in the peripheral cornea, in 9/66 at the limbus, and in 9/66 axial. The mean Dm thickness was the same in CL (14.6 ± 6.35 um) and ACL (14.65 ± 11.05 um). In 21/66 eyes matrix material were seen in between the CL and ACL and in 14/66 eyes, there were spindle cell nuclei, and in 5/55 cases a broad zone of tissue was seen. The endothelium was attenuated in 43/66 eyes, partially attenuated in 4/66 eyes, absent in 10/66, and normal in 9/66 cases. In 5/66 eyes, a Dm overgrowth on the iris surface with a mean thickness of 10 ± 8.65 um was noted. Further corneal features were retrocorneal membrane formation in 19/66 and anterior synechia in 14/66 cases. 24/66 cases were aphakic eyes because of previous cataract surgery, 50/66 eyes had chronic

(primary/secondary) glaucoma, and 35/66 showed preiridal fibrovascular membranes and peripheral synechia. 14/66 cases had lens luxation, 17/66 retinal detachment, 10/66 showed intraocular features of blunt trauma and 3/66 had intraocular neoplasm. In 7/14 cases, the CK stain of the epithelium cells were weakly and intermittently positive, in one eye was strongly positive.

Conclusion: Chronic glaucoma, either primary or secondary due to traumatizing conditions (blunt, intraocular surgery, lens luxation) were observed in these eyes with duplication of Dm. We speculate that epithelial transformation of the corneal endothelium in association with direct contact trauma to the endothelium plays a role in the pathogenesis of this phenomenon.

PERIOCULAR FELINE COWPOX VIRUS INFECTIONS

I. ALLGOEWER[1], W.V. BOMHARD[2]

[1] *Animal Eye Practice, Berlin, Germany*

[2] *Veterinary Specialty Practice for Pathology, Munich, Germany*

Purpose: To describe ophthalmologic and histopathologic findings in two cats with peri-ocular feline poxvirus infections.

Methods: Ophthalmologic and general examination, hematology and serum chemistry, bacterial culture and sensitivity testing, fine needle aspiration biopsy (FNAB) of the submandibular lymph node as well as histopathologic examination of full thickness biopsies of the affected skin were performed.

Results: Both cats showed bilateral erosive periocular skin lesions with marked swelling. Histopathologic examination revealed a severe necrotizing and eosinophilic dermatitis with large intracytoplasmatic eosinophilic inclusion bodies. Results of hematology and blood chemistry, bacterial culture and senstivitiy testing as well as cytology of the FNAB of the lymphnodes were unspecific. Final diagnosis was based on the histopathologic findings in both cases. At the German national reference laboratory for poxvirus infections (Robert-Koch-Institut in Berlin, Germany) the diagnosis was confirmed by PCR on formalin-fixed and paraffin-embedded tissue. Treatment was directed to secondary bacterial infections (benzylpenicilline) and anti-inflammatory (carprofen). Healing was spontaneous and recovery was uneventful.

Conclusion: Feline cow poxvirus infections have to be considered as a differential diagnosis in periocular erosive skin lesions in free roaming cats. Because of the zoonotic potential of feline poxvirus infections the handling personnel as well as the owners of affected cats have to be instructed to follow basic hygiene precautions

FLORIDA KERATOPATHY IN SIXTEEN CATS AND A DOG IN ISRAEL

H. SARFATY *1 Sapir St 52622, Ramat-Gan, Israel*

Purpose: To describe a case series of feline and canine Florida Keratopathy (FK) in Israel and to investigate their etiology.

Methods: Retrospective study of 16 cats and a dog, which were diagnosed with FK between 2003 to 2007 based on pathognomonic clinical signs. Four cats were followed for six months for changes in size and number of ophthalmological lesions. Complete blood count (CBC), serum biochemistry, thoracic radiography and urinalysis were performed in all four cats at presentation. One cat was anesthetized and underwent keratectomy. Corneal samples were submitted for culture (general bacteriology, mycology, *Mycoplasma spp*., *Chlamydophila* and acid-fast organisms) and histopathology. An association between the presence of the small fire-ant *Wasmania auropunctata* was suspected and an environmental examination was conducted.

Results: Corneal lesions were restricted to the superficial stroma while the corneal epithelium was intact. There was a variable number of whitish-grayish circular lesions with central dense white spots in each lesion. Lesions were unilateral or bilateral and asymmetrical. The dog had similar findings than the cats. There were no CBC, serum biochemistry and thoracic radiography abnormalities and all bacterial cultures were negative. Histopathology revealed a normal superficial corneal structure with no evidence of inflammation or infection, as has been reported previously in FK. The geographic distribution of the small fire-ant in Israel was found to closely correlate to the areas of the suspected FK cases ; also the prevalence of cases in single geographic locations was higher where the fire-ant population was found to be higher. The world geographic distribution of the small fire-ant and FK does also correlate very closely.

Conclusion: The presumptive diagnosis of FK in all cases was based on the association between presence of fire-ants, typical clinical signs and lack of corneal histopathological abnormalities (in one sample case). The results of the bacteriological investigation in the animals prove that no corneal infection is present in feline FK. A chemical bum due to contact with the fire-ant or its venom is the proposed etiology. Further research on FK and its association with fire-ants is warranted.

ACANTHAMOEBA & NOVEL CHLAMYDIAE ETIOLOGIC AGENTS FOR FELINE KERATITIS ?

M. RICHTER[1], F. MATHEIS[1], G. GREUB[2], F. GRIMM[3], E. GONCZI[4], B. SPIESS[1]

[1] *Section of Ophthalmology, Equine Department, Vetsuisse Faculty, University of Zurìch, Switzerland*

[1] *Center of Research on Intracellular Bacterìa (CRIB), Institute of Microbiology, University Hospital Center and University of Lausanne, Switzerland*

[3] *Institute of Parasitology, Vetsuisse Faculty, University of Zurìch, Switzerland*

[4] *Clinical Laboratory, Department of Farm Animals, Vetsuisse Faculty, University of Zurìch, Switzerland*

Purpose: to evaluate if *Acanthamoeba spp*. and *Novel Chlamydiae* may be associated with feline keratitis.

Methods: Corneal samples of 63 eyes (40 eyes with keratitis and 23 normal eyes) obtained by scraping of the corneal surface using a cytobrush (n = 22 eyes with keratitis, 22 normal eyes), by keratectomy (n = 8 eyes with keratitis, 1 normal eye) or by both methods (n = 10 eyes with keratitis) were screened with an *Acanthamoebae* specific 18S rDNA gene PCR and with a *Chlamydiales* order specific 165 rRNA gene PCR. Furthermore, real-time PCRs for detection of DNA of *Parachlamydia acanthamoebae, Protochlamydia ssp., Chlamydophila felis* and FHV-1, respectively were performed.

Results: FHV-1 DNA was detected in 13/40 eyes with keratitis and in 11/22 normal eyes. *Chlamydiales* order specific 16S rRNA was detected in 3/40 eyes with keratitis and in 5/23 normal eyes. P. *acanthamoebae* DNA was detected in 5/40 eyes with keratitis and in 6/23 normal eyes. *Chlamydophila felis* DNA was detected in 2/40 eyes with keratitis and in 0/23 normal eyes. *Protochlamydia* DNA and *Acanthamoeba* rDNA was not detectable in any sample.

Conclusion: *Acanthamoeba* do not seem to be associated with feline keratitis. Novel *Chlamydiae* DNA and FHV-1 DNA have been found in samples of both, normal and diseased feline corneas, assuming rather an incidential finding then a clinical association.

LENS INSTABILITY IN THE DOG:A RETROSPECTIVE STUDY OF SURGICAL RESULTS IN 102 CASES (155 EYES) (1994-2004)

S MANNING[1], P. RENWICK[1], C. HEINRICH[1], P. CRIPPS[2]

[1] *Willows Referral Service, 78 Tanworth Lane, Shirley, West Midlands B90 4DF, UK*

[2] *Umversity of Liverpool Veterinary School, Leahurst, Neston, CH64 7TE, UK*

Purpose: To ascertain the success rate following the surgical management of lens instability, and to determine the influence of the position of the lens prior to surgery, the method of surgery and the presence of pre-operative ocular hypertension on the duration of vision and incidence of postoperative complications.

Methods: Records of dogs with lens instability presented between 1994 and 2004 were reviewed. Animals were included in the study if they underwent lens extraction either by intracapsular lens extraction (ICLE) or phacolentectomy following a diagnosis of primary lens luxation. A Kaplan-Meier survival analysis was selected for the statistical evaluation.

Results: 155 eyes of 105 dogs were included. The survival analysis demonstrated no significant difference in the survival probability (for retention of vision only) based on the position of the lens when a comparison was made of anteriorly luxated, posteriorly luxated and subluxated lenses removed by ICLE, the median survival time approximating 2.04 years. A significant increased success rate was demonstrated when subluxated lenses were removed by phacoemulsification, with 75% estimated to remain visual 2.75 years post-operatively compared with approximately 40% of ICLE managed subluxated lenses at the same time period. There was no evidence that the presence of pre-operative ocular hypertension had an influence on the median survival time for vision post-operatively; however these eyes did develop retinal detachment and ocular hypertension/ glaucoma more frequently than those that were normotensive pre-operatively. Retinal detachment was seen in 28% of operated eyes that underwent ICLE compared with 6% that underwent phacolentectomy. 60% of eyes were lost to or treated for ocular hypertension/glaucoma following surgery.

Conclusion: A significant greater long-term success rate for retention of vision was obtained following the surgical treatment of lens instability by phacolentectomy. A high incidence of post-operative ocular hypertension/glaucoma was associated with the surgical management of this disease, for which the aetiology is unknown.

ADULT CANINE RETINA NEURAL PROGENITOR CELLS

A.R.R.CARVALHO[1], D.FONDEVILA[1], T.PENA[1], M.D. TORRES[1], M. LEIVA[1], P. MARTINEZ[2], A. IBORRA[2]

[1] *Department de Medicina i Cirurgia Animals, Universitat Autònoma de Barcelona*

[2]*Institut de Biologia i de Biomedicina, Universitat Autònoma de Barcelona, Barcelona, Spain*

Purpose: It is well established that neurogenesis persists in specific regions of the adult brain in many animals species. Neural progenitor cells (NPC) are well characterized in the central nervous System (CNS) in mammals, being present in the dentate gyrus of the hippocampus, as well as in the subventricular zone of the lateral ventrides. In the retina, they are found during development and while retina is still immature, although recent research has demonstrated the presence of these cells in the adult human retina. Given the observed poor propensity to retinal regeneration, we designed this study in an attempt to isolate NPC from adult canine retinas, as the first step to investigate the neurogenesis properties of this cell population in the near future.

Methods: 4 donated retinas from 2 dogs (male Beagle and female Cross-bread), aging 6 and 7 years respectively, derived from the Clinic Veterinary Hospital of the Universitat Autònoma of Barcelona (CVH/UAB) were used in this study. Retinas were enzymatically digested, and cell suspension was cultured in DMEM: F12, supplemented with N2 and FGF for 3 weeks to generate neurospheres (NS). Passages were mechanically performed. Dividing cells were labelled in culture medium supplemented with lOuM BrdU (5-bromo-2-deoxyuridine, BD bioscience). After 2 days of incubation with BrdU, immunocytochemistry was performed.

Results: NPC derived from adult dog retinas presented the same characteristics in culture as NPC from brain and developing retina. The cells were able to form free floating neurospheres, beginning to grow at 48 to 72h. After NS dissociation, single cells formed new NS from cell division and adhesion. NS could be maintained for up to 3 months in culture. Ali NS were BrdU positive demonstrating high proliferative status.

Conclusion: This is the first report relating to the presence of NS generated from adult canine retina. NS formation and the proliferative capacity evaluated by the BrdU assay are indicative of the presence of NPC. Our study will further address the differentiation characteristics of canine retinal NPC.

Support: Andrea RR Carvalho receives doctoral funding from Ministério da Educacào do Brasil (CAPES).

Case Report

Congenital Stationary Night Blindness in the Danish Knabstrupper horse

by
Michala de Linde Henriksen

Two Danish Knabstrupper horses were examined for congenital stationary night blindness (CSNB) by electroretinography (ERG). The Knabstrupper horse has a phenotypic resemblance of the Appaloosa horse: both are spotted horse breeds and both breeds have pedigrees that go back to the Spanish horse[1]. New research has shown that Appaloosa horses with the gene combination LpLp (homozygote) are most likely to have CSNB. Appaloosa horses with the leopard (LpLp) gene combination are almost completely white compared to the Lplp (heterozygote) Appaloosa horses, which are very spotted, and the lplp (wild type) horses, which have no spots at all. It has recently been shown that 25% of the Appaloosa horses studied have CSNB[2,3].

One of the Knabstrupper horses used for functional evaluation with ERGs was a white mare (LpLp) (animal a) with an anamnesis of having behaviour problems at night. The other Knabstrupper horse was a spotted mare (Lplp) (animal b) with no anamnesis of behaviour problems. Both horses had no signs of vitamin-A deficiency on the blood samples taken, and the ophthalmologic examinations showed no abnormalities. For the ERG examination, both horses where sedated with detomidine (0.1 ml/100kg, 10mg/ml), butorphanol tartrate (0.1ml/100kg, 10mg/ml), acepromazin (0.2ml/100kg, 10mg/ml) and atropine-sulphate (0.05ml/kg, 10mg/ml). Topical anesthesia was applied to the right eye as well as short-acting mydriatics. The horse's head was placed on a table with a mattress for support and protection. The horses were dark adapted for 20 minutes and an HMsERG unit (RetVetCorp.Inc., Columbia, MO, USA) was positioned approximately 1cm in front of the horse's right eye, mounted on a camera tripod, in order to automatically run the ERG protocols, which included scotopic and photopic intensity series (***Fig 1***), ranging from 100 mcd.s/m2 to 25000 mcd.s/m2 of white light stimulation in the dark and 10 mcd.s/m2 to 25000 mcd.s/m2 in the light. Before running the protocols an eye speculum was placed to retract the eyelids and the active contact lens electrode (ERG-Jet, LKC technologies Inc.) cushioned on the cornea using 2.5% methylcellulose (Gonak), with

the electrode wire taped to the forehead for stability. Reference and ground subdermal needle electrodes (Astro-Med. Inc., Grass Telefactor), with the wires also taped to the skin, were placed approximately 6 cm temporal to the lateral canthus of the eye and at the occiput, respectively.

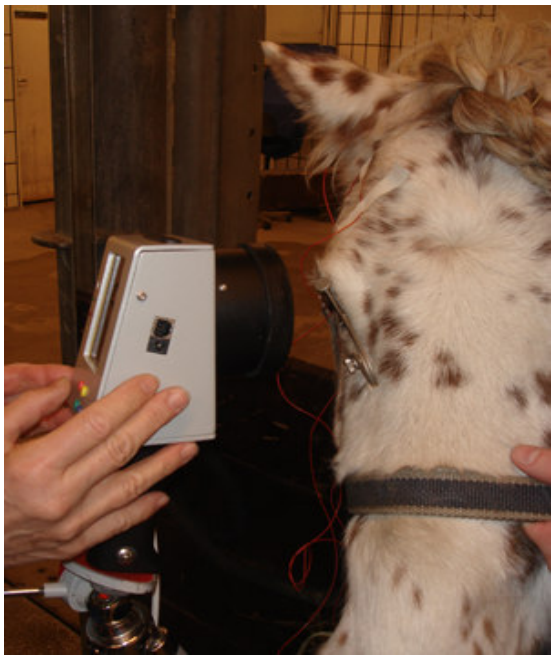


Fig. 1: An HMsERG unit was positioned approximately 1cm in front of the horse right eye, mounted on a camera tripod, in order to automatically run the ERG scotopic and photopic intensity series protocols.

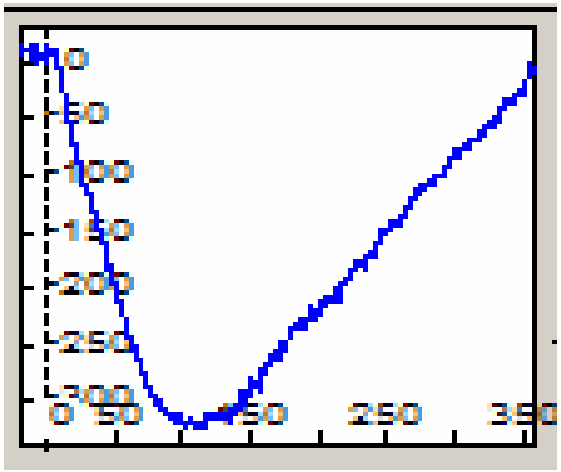


Fig 2: Animal a; a homozygote Knabstrupper horse with a negative ERG which is characteristic for a CSNB patient

Figure two illustrates example of ERG recordings made on animal a. Note the absence of a b-wave and the negative ERG, characteristic for CSNB.

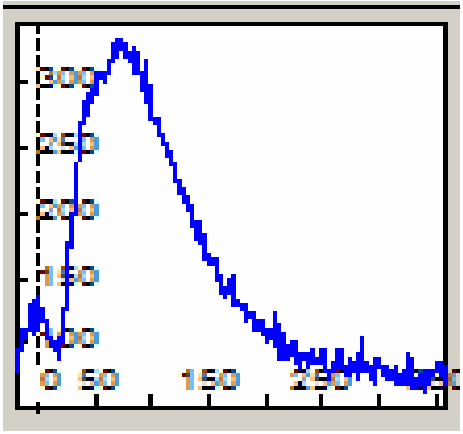


Fig 3: Animal b; An Heterozygote Knabstrupper horse with no signs of CSNB and with a normal ERG

Figure three illustrates ERG recordings made on animal b. This ERG shows no abnormalities and therefore no signs of CSNB.

Comment: The examination showed that the Danish Knabstrupper horse has a retinal disorder corresponding to CSNB, just like the Appaloosa. More research is needed before CSNB in the Knabstrupper horse and the possible involvement with the leopard gene (LpLp) can be further evaluated. Further, a large scale clinical survey is needed in order to estimate the incidence of CSNB in the Danish Knabstrupper horse.

Many thanks to Kristina Narfström, Keith Baptiste, Annette Flagstad & Pia Haubro Andersen for help and support with this study.

1. www.knabstrupper.se/knapstrupperhistorik

2. Sandmeyer L.S., Bruce H.G. & Breaux C.B.(2006): "Diagnostic Ophthalmology"; *Canadian Veterinary Journal*, Vol 47: 1131-1132

3. Sandmeyer L.S., Breaux C.B., Archer, S. & Grahn B.H. (2007): Clinical and electroretinographics of congenital stationary night blindness in the Appaloosa and the association with the leopard complex"; *Veterinary Ophthalmology*, Vol. 10(6): 368-75

Note from the ISVO Treasurer

Since the Globe is being sent out by email now and that process is being handled by RetVet Corp. here in the U.S., the only on-going expenses the ISVO has now are associated with our meeting every other year.
The expense of printing the Globe and sending out by surface mail was nearly $1000 per issue, so without that expense, and because we have about $40,000 U.S. in savings, we have suspended the $20 U.S. biannual membership fee. All who are members will continue to be members and won't receive dues notices until such time as we need more income.
We continue to encourage new membership. If you wish to join for a $20 membership fee, you can email me at jandlh@comcast.net for an application. Membership can be paid for by VISA or Mastercard credit cards, U. S. check (drawn on U.S. bank) or by sending a $20 bill in U.S. currency.
Lloyd C. Helper, Treasurer ISVO

Jean & Lloyd Helper
1201 White Oak Ct;
Ft. Collins CO 80525
FAX & Phone 970-282-0621

Useful e.mail addresses

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American Society of Veterinary Ophthalmology (ASVO): **www.asvo.org**

European College of Veterinary Ophthalmologists (ECVO): **www.ecvo.org**

European Society of Veterinary Opthalmology (ESVO): **www.esvo.org**

Japanese College of Veterinary Ophthalmologists (JCVO): **www.jscvo.jp**

British Association of Veterinary Ophthalmologists (BrAVO): **www.bravo.org.uk**

European School for Advanced Veterinary Studies: **www.esavs.net**

Continuing Education Courses in the United Kingdom: **www.bsava.com**

International Veterinary Information Service (IVIS): **www.ivis.org**

LatinoAmerican College of Veterinary Ophthalmologists: **www.clov.org**

Nice home page in German:
www.augentierarzt.at

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jllaus@fcav.unesp.br

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