AMERICAN COLLEGE of VETERINARY RADIOLOGY

2025 ACVR ANNUAL SCIENTIFIC CONFERENCE

OCTOBER 15–18 2025 | WASHINGTON, DC | OMNI SHOREHAM HOTEL

PROCEEDINGS

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PROGRAM COMMITTEE and ADMINISTRATION

Program Committee

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Dr. Jaime Rechy, Chair 2025
Dr. Jennifer Brisson, Co-Chair Forum 2025 and Future Chair 2026
Dr. Kristina Stadler, CT MRI Society
Dr. Jennifer Hickey, Ultrasound Society
Dr. Rebecca Urion, Large Animal Diagnostic Imaging Society
Dr. Keely Brewer, Zoological Exotic & Wildlife Diagnostic Imaging Society
Dr. Samantha Loeber, Nuclear Medicine Society
Lisa Chant, AVTDI Representative (Technician)
Dr. Anthony Fischetti, Webmaster
Libby Dietrich, Ex-Officio, Executive Administrator
Brendan Leahy, Ex-Officio, Deputy Executive Administrator
Jill Alveraz, Ex-Officio, Meeting Manager
Chelsea Marshall, Ex-Officio, Meeting Manager
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Dr. Kemba Clapp, Ex-Officio, ACVR President-Elect
Dr. Kim Selting, Ex-Officio, ACVR-RO President
Dr. Matt Cannon, Ex-Officio, ACVR Treasurer
Dr. Tod Drost, Ex-Officio, ACVR Executive Director

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Dr. Kim Selting, ACVR-RO President
Dr. Michelle Turek, ACVR-RO Past-President
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Dr. Fintan McEvoy, ECVDI President
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Dr. Stephanie Nykamp, Ex-Officio, Radiology/EDI Examination Director and EDI Examination Chair
Dr. Ken Waller, Ex-Officio, Radiology/EDI Examination Director and EDI Examination Chair
Dr. Tracy Gieger, Ex-Officio, Radiation Oncology Examination Chair
Dr. Leanne Magestro, Ex-Officio, Radiation Oncology Examination Assistant Chair
Dr. Tod Drost, Executive Director

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Dr. Ryan Appleby
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Dr. Kim Selting, President
Dr. Jayme Looper, President-Elect
Dr. Michelle Turek, Past-President
Dr. Molly Holmes, Secretary
Dr. Tracy Gieger, Radiation Oncology Examination Director

HOTEL INFORMATION

Omni Shoreham Hotel
2500 Calvert Street Northwest,
Washington, DC 20008

Check-In Time: 3:00 pm
Check-Out Time: Noon

Conference Registration
Registration is located Lobby Level of the hotel at the existing registration desk.

Registration Desk Hours
Tuesday, October 14
6:00 pm – 8:30 pm

Wednesday, October 15
7:00 am – 5:00 pm

Thursday, October 16
7:00 am – 5:00 pm

Friday, October 17
7:30 am – 5:00 pm

Saturday, October 18
7:30 am – 12:00 pm

Wi-Fi Information
Network Name: Omni Meeting
Access Code: 2025ACVR

Parking
Valet parking only including in/out privileges
($55 plus tax per car daily)
- 0 – 4 hours: $40 + tax *(Daily max: $55 + tax)*
- Overnight Parking $55 + tax
  (includes in/out privileges)

Nearby Garages / Alternatives

Garage / Lot	Distance from Hotel	Rate
Omni Shoreham Hotel Garage—Valet	~ 279 ft	~$25
Alley Space—2631 Connecticut Ave. NW (Valet-Assist)	~ 0.2 mi	~$24
Universal South Garage (2001 Florida Ave NW)	~ 0.7 mi	~$15
2421 18th St NW (2328 Champlain St. NW) Garage	~0.7–0.8mi	~$20-22

From Dulles International Airport—28 miles
From Rock Creek Parkway—8 miles
From Baltimore/ Washington International Airport—34 miles

GENERAL INFORMATION

Directions from Baltimore and the North – Via I-95 South or 295

Take either Baltimore/Washington Parkway (295) or I-95 South to Exit I-495 West. Follow 495 West to Exit 33 South (Connecticut Avenue). Travel south approximately 5.5 miles. Turn right onto Calvert Street. The hotel is 1 block up on the left.

Directions from the South – Via I-95 North and I-395 North

From I-95 North, merge onto I-395 North via Exit 170A. Take I-395 North across the 14th Street Bridge. Merge onto US-1 North via the exit on the left. Stay straight to go onto 14th Street. Follow 14th Street to R Street. Turn left onto R Street. Turn right onto Connecticut Avenue. Cross the Taft Bridge. Turn left onto Calvert Street. The hotel is 1 block up on left.

Directions from the West— Via Routes 66 and 50 East

Go over Roosevelt Bridge to Constitution Avenue. Turn left onto 18th Street. Turn left onto Connecticut Avenue. Cross Taft Bridge. Turn left onto Calvert Street. The hotel is 1 block up on left.

Directions from Annapolis, MD— Via Route 50 West

Take Route 50 West to New York Avenue. Bear right on Massachusetts Avenue. Go around Dupont Circle, pass P, New Hampshire and 19th Streets. Turn right onto Connecticut Avenue northbound after Starbucks. Cross the Taft Bridge. Turn left onto Calvert Street. The hotel is 1 block up on left.

Transportation:

- Hotel-arranged car rental service and sightseeing tours
- Metrorail—1 block
- Union Station, Amtrak/Greyhound Station – 4 miles
- Ronald Reagan National Airport – 8 miles
- Dulles International Airport – 30 miles
- Baltimore-Washington International Airport—45 miles

Options From Dulles International Airport

- Taxi service is approximately $40 plus gratuity
- Sedan Service (reservations required): Approximately $105 for up to four passengers)
- Metro: The Silver Line Express schedule can be found here.

Options From Reagan National Airport

- Taxi: Approximately $20—$25
- Sedan Service (reservations required): Approximately $65 (up to four passengers)
- Metro: Take the Blue Line metro in the direction of Largo to the Metro Center. Change to the Red Line in the direction of Shady Grove. Take the Red Line to the Woodley Park/Zoo Metro Station. The hotel is located 1 block from the Metro. Once you have exited the Metro via the escalators, go to the right and down the stairs. Go to the left and walk to Calvert Street (1 block). Cross the street and take a right. The hotel will be on your left-hand side. Approximately $1.35 – $2.55 per person.

Options from Baltimore/Washington International Airport

- Taxi Service: Approximately $75—$100 (allow 60 minutes of travel time)
- Sedan Service (reservations required): Approximately $125 (up to three passengers)
- Train: Take the free shuttle from the airport to BWI Marshall Rail Station and take either the AMTRAK/MARC train to Union Station. Once at Union Station, take the Metro (Red Line) in the direction of Shady Grove to the Woodley Park/Zoo/Adams Morgan stop. The hotel is located half a block from the Metro. Approximately $6 for MARC and $1.75 for Metro. MARC is available Monday – Friday (limited schedules on holidays). AMTRAK is available daily with service on the weekends (ticket prices vary).

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1. Download the ACVR App

Scan the QR Code or go to the Apple App Store or Google Play and search for **ACVR.**

App Icon

Install and open the app. Find your event icon in the Upcoming Events (bottom row) or search for **2025 ACVR Scientific Conference.**

Tap the event icon to launch your event's app.

Event Icon

2. Login to the App

If this is your first time accessing the mobile app, please create an account by entering the event code **ACVR2025** followed by your name and email address.

If you already have an account, please log in using the credentials that were emailed to you upon account creation at time of initial download.

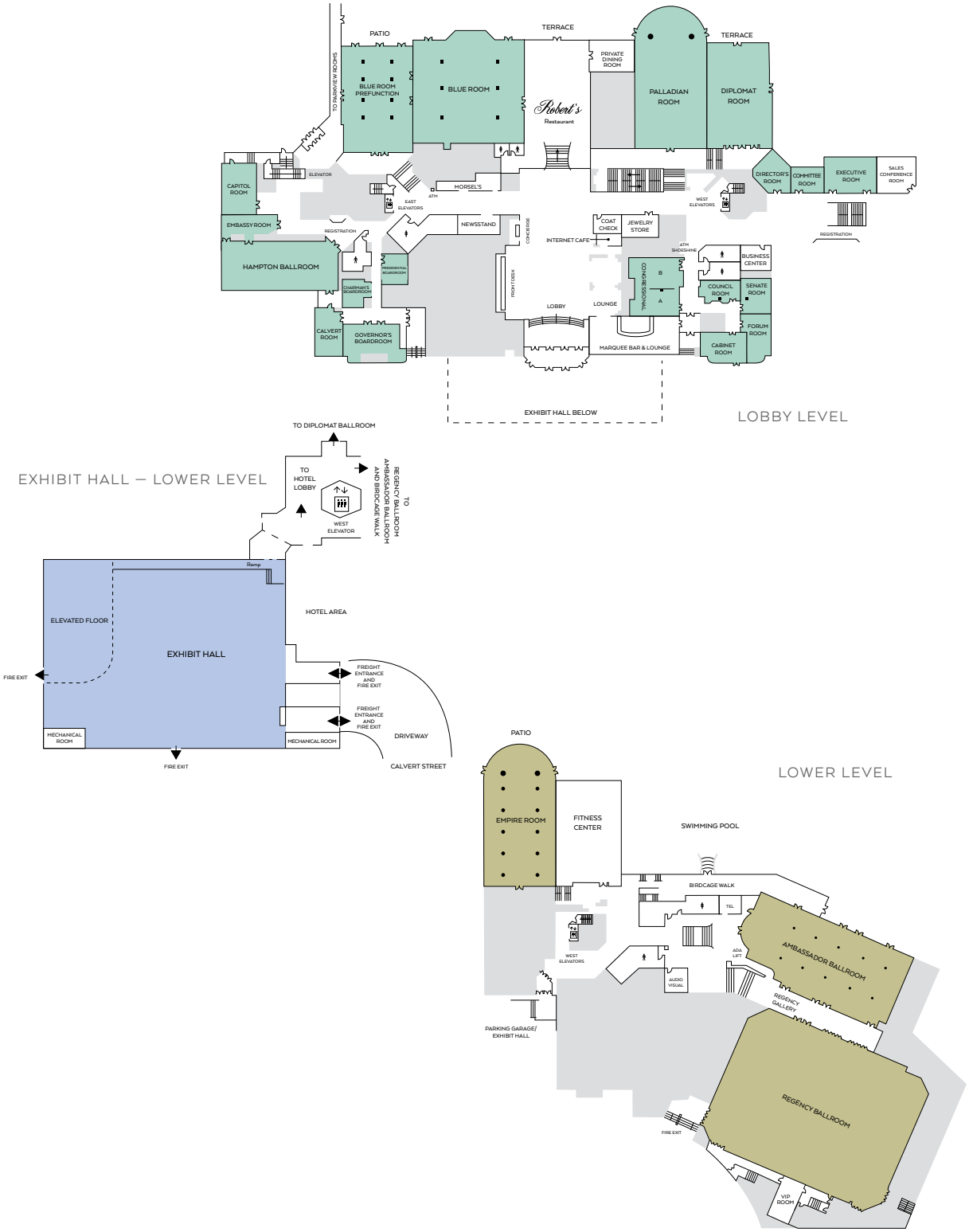
3. App Tips

Download the app before you go! Wi-Fi connection on-site can affect the functionality of the app.

Browse the event information and create a personal schedule by tapping on the star next to presentation titles.

HOTEL MAP

OMNI SHOREHAM HOTEL MEETING SPACE



SPONSORED EVENTS

Tuesday, October 14
Welcome Reception
Sponsored by Veritas Veterinary Partners
6:30 – 8:30 PM
Exhibit Hall | Omni Shoreham Hotel

Thursday, October 16
Industry Insights—Integrated AI and remote monitoring tools drive operational efficiency, imaging accuracy, speed, and uptime across the diagnostic imaging spectrum
Hosted by Varian
1:30 PM – 2:00 PM
Regency Ballroom

Thursday, October 16
Halcyon Overview, Enhancements, and Dynamic Patient Positioning
Hosted by Varian
5:00 – 7:00 PM
VIA ROMA PIZZERIA – DINING ROOM
2606 Connecticut Ave NW, Washington, DC 20008
Please join us to learn about Halcyon enhancements and dynamic patient positioning, presented by Varian. Reception to follow.

Thursday, October 16
A Night at the Sax
Hosted by Vets Choice Radiology
7:00 PM – 1:00 am
The Sax Restaurant | 734 11th St NW, Washington, DC 20001
RSVPed event.

Friday, October 17
Resident Mixer
Hosted by MedVet/VetRad
7:30 – 9:30 PM
Lebanese Taverna | 2641 Connecticut Ave NW, Washington, DC 20008
This event is reserved for residents only. RSVPed event.

AGENDA

Tuesday, October 14

Start Time	End Time	Session	Room
6:00 PM	8:30 PM	Registration Opens	Registration Desk
6:30 PM	8:30 PM	Welcome Reception in Exhibit Hall *Sponsored by Veritas Veterinary Partners*	Exhibit Hall

Wednesday, October 15

Forum Day—"Monday Ready"

Start Time	End Time	Session	Room
7:00 AM	5:00 PM	Registration Open	
8:00 AM	8:05 AM	Welcome Remarks *Dr. Jaime Rechy, Program Chair*	Regency Ballroom
8:00 AM	9:00 AM	Interventional Approach to Portosystemic Shunts: What We Have Learned and How It Can Help Radiologists! *Chick Weisse, VMD, DACVS*	Regency Ballroom
9:00 AM	10:00 AM	Cardiac CT for Planning Structural Heart Interventions *Brian Scansen, DVM, MS, DACVIM*	Regency Ballroom
10:00 AM	10:30 AM	Break with Exhibitors	Exhibit Hall
10:30 AM	11:30 AM	Angiography and Intervention for Structural Heart Disease *Brian Scansen, DVM, MS, DACVIM*	Regency Ballroom
11:30 AM	12:30 PM	Interventional Management of Respiratory Disease: What the Radiologist Should Know About Options *Chick Weisse, VMD, DACVS*	Regency Ballroom
12:30 PM	2:00 PM	Lunch	
2:00 PM	3:00 PM	Contrast Fluoroscopy for Imaging of the Urinary Tract *Marilyn Dunn, DVM, MVSc, DACVIM*	Regency Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
3:30 PM	4:30 PM	IR Panel Discussion with Drs. Scansen, Dunn, Weisse *Moderator: Anthony Fischetti, DVM, DACVR*	Regency Ballroom

Wednesday, October 15

Forum Day—"Monday Ready"

Start Time	End Time	Session	Room
4:30 PM	5:30 PM	FAQ Session with DI and EDI Exam Director *Ken Waller, DVM, DACVR*	Regency Ballroom
6:00 PM	9:30 PM	Introduction of New Diplomates	Empire Ballroom/Patio

Wednesday, October 15

Radiation Oncology

Start Time	End Time	Session	Room
8:30 AM	8:35 AM	Welcome Remarks	
8:30 AM	9:00 AM	Deep Learning-based Synthetic Computed Tomography Generation from High-field Magnetic Resonance Images for Canine Intracranial Radiation Therapy Planning; *Jordan Denitz* Clinical Outcomes Following Stereotactic Radiosurgery and Radiotherapy for Imaging-diagnosed Intracranial Canine Meningiomas; *Jennifer Piatt*	Palladian Ballroom
9:00 AM	10:00 AM	RO Keynote: Advanced Technologies in Planning and Delivery of Radiotherapy: Potential applications to veterinary medicine *Keith Cengel, MD, PhD*	Palladian Ballroom
10:00 AM	10:30 AM	Break with Exhibitors and RO Poster Session	Exhibit Hall

Wednesday, October 15

Radiation Oncology

Start Time	End Time	Session	Room
10:30 AM	11:30 AM	Biomarkers to Predict and Monitor Response to Radiation Therapy; *Kim Selting* Coarsely Fractionated Radiation Therapy for the Treatment of 20 Dogs with Neuroendocrine Neoplasms; *Ryan Freed* Five-fraction Daily Hypofractionated Radiotherapy for Localized Nonmetastatic Canine Soft Tissue Sarcoma: Results from a Prospective Clinical Trial; *Brianne Karten* FLASH Radiation Therapy in Canine Appendicular Osteosarcoma; *Tricia Hu*	Palladian Ballroom
11:30 AM	12:30 PM	VRTOG Meeting: Including SBRT Protocol Discussion	Palladian Ballroom
12:30 PM	2:00 PM	Lunch	

Wednesday, October 15

Radiation Oncology

Start Time	End Time	Session	Room
2:00 PM	3:00 PM	Low-dose Radiation Therapy Using Standard versus Low Dose Rate Delivery as a Novel Treatment for Chronic Avian Pododermatitis; *Cassandra Rodenbaugh* Comparative Outcomes of Feline Oral Squamous Cell Carcinoma Treated with Stereotactic Body Radiation Therapy with or Without Concurrent Toceranib; *Dayoung Oh* Radiation Therapy Combined with ATR Inhibition for the Treatment of Feline Oral Squamous Cell Carcinoma; *Efstathia Palyvou* Non-irradiation-related Complications in Cats Undergoing Radiotherapy; *Skylar Sylvester*	Palladian Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
3:30 PM	4:30 PM	RO Business Meeting *RO Diplomates Only!*	Palladian Ballroom

Wednesday, October 15

Equine Diagnostic Imaging: Focus on the cervical vertebral column and musculoskeletal PET

Start Time	End Time	Session	Room
8:45 AM	9:00 AM	Welcome Remarks	
9:00 AM	10:00 AM	Does This Report Make Me Look Compressed? What a Neurologist Wants to Know. *Amy Johnson, DVM, DACVIM*	Ambassador Ballroom
10:00 AM	10:30 AM	Break with Exhibitors	Exhibit Hall
10:30 AM	11:30 AM	Dynamic CT Myelography *Natasha Werpy, DVM, DACVR*	Ambassador Ballroom
11:30 AM	12:30 PM	Getting It Straight: Pathologic Correlation of Developmental and Degenerative Lesions of the Equine Spine and Nervous System *Julie Engiles, VMD, DACVP*	Ambassador Ballroom
12:30 PM	2:00 PM	Lunch	
2:00 PM	3:00 PM	What Surgeons Need from an Imaging Report—Fusion and Foraminotomy *Kyla Ortved, DVM, PhD, DACVS, DACVSMR*	Ambassador Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
3:30 PM	4:30 PM	EDI Panel—Advances in the Multidisciplinary Evaluation and Management of Cervical Vertebral Dysfunction in the Horse *Moderator: Kathryn Bills, VMD, DACVR, DACVR-EDI* *Panelists: Amy Johnson, DVM, DACVIM; Natasha Werpy, DVM, DACVR; Kyla Ortved, DVM, PhD, DACVS, DACVSMR;* *Julie Engiles, VMD, DACVP*	Ambassador Ballroom

Wednesday, October 15

AVTDI Track

Start Time	End Time	Session	Room
8:00 AM	9:00 AM	The Shield and the Field: A Guide to CT and MRI Safety *Ashley Showalter-Bourgeois, RVT, M.Ed, MSIT*	Diplomat Ballroom
9:00 AM	10:00 AM	Perfecting the Patient Position: A CT and MRI Guide to a-maze-ing Images *Ashley Showalter-Bourgeois, RVT, M.Ed, MSIT*	Diplomat Ballroom
10:00 AM	10:30 AM	Break with Exhibitors	Exhibit Hall
10:30 AM	11:30 AM	Lower the Dose and the Optimal Diagnostic Image *Michael Q. Bailey DVM, DACVR, AAAS/AVMA Fellow*	Diplomat Ballroom
11:30 AM	12:30 PM	Radiation Safety Culture, Optimizing your Radiology Workflow, and Understanding AI *Michael Q. Bailey DVM, DACVR, AAAS/AVMA Fellow*	Diplomat Ballroom
12:30 PM	2:00 PM	Lunch	
2:00 PM	3:00 PM	To Ultrasound or Not to Ultrasound *Jenelle Sharpley DVM, DACVR*	Diplomat Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
3:30 PM	4:30 PM	Seeing Beyond the Surface: Recognizing Common and Critical Ultrasound Findings *Megan Gonzalez, CVT, VTS-DI*	Diplomat Ballroom

AGENDA

Thursday, October 16

General Agenda

Start Time	End Time	Session	Room
7:00 AM	5:00 PM	Registration Open	
8:00 AM	9:00 AM	Conference Keynote: Feline Ureteral Obstruction *Marilyn Dunn, DMV, MVSc, DACVIM*	Regency Ballroom
9:00 AM	10:00 AM	CT MRI Interpretation of Small Animal Musculoskeletal MRI *Shannon Holmes, DVM, MSc, DACVR*	Regency Ballroom
10:00 AM	10:30 AM	DI Poster Presenter Session and Break with Exhibitors	Exhibit Hall
10:30 AM	11:30 AM	Magnetic Resonance Imaging Features of Histopathologically Confirmed Intracranial Ependymoma In Dogs; *Alexander Chapple* Magnetic Resonance Thoracic Ductography in Dogs Using T2 FASE, Heavily T2 FASE, and SSFP; *Karin Tahara* Dexmedetomidine Administration and Dose Is Associated with Periportal Halo Sign in Dogs Undergoing Contrast Computed Tomographic Scans of the Liver; *Brady Stutzman* CT Evaluation of Axial Rotation with Tracheal Collapse in Dogs; *Takafumi Kojima*	Regency Ballroom
11:30 AM	12:30 PM	ACVR Annual Business Meeting Diplomates only!	Regency Ballroom
12:30 PM	2:00 PM	Lunch	
1:30 PM	2:00 PM	Industry Insights: Integrated AI and remote monitoring tools drive operational efficiency, imaging accuracy, speed, and uptime across the diagnostic imaging spectrum *Sponsored by Varian, a Siemens Healthineer* *Jason Miller; Senior Director*	Regency Ballroom

Thursday, October 16

General Agenda

Start Time	End Time	Session	Room
2:00 PM	3:00 PM	Nuclear Medicine/LADIS Keynote: Unparalleled Impact of PET-CT-MRI Based Molecular Imaging in Managing Common and Complicated Diseases and Disorders, their Potential Applications in Veterinary Medicine *Abass Alavi, MD*	Regency Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
3:30 PM	5:30 PM	Team Talk: Veterinary Imaging Education from Students to Residents *Rachel Pollard, DVM, PhD, DACVR; Elissa Randall. DVM, MS, DACVR; Heather Chalmers, DVM, PhD, DACVR; Jennifer Brisson, DVM, DACVR; Julie Noyes, DVM, PhD, MA, MS; Katie Phillips, DVM, DACVR*	Regency Ballroom
7:00 PM	1:00 AM	A Night at the Sax—Free food, free drinks, dancing, and fun! *Sponsored by Vets Choice Radiology* Vet's Choice is excited to invite you to their annual party! This year they are hosting a Night at the Sax - an evening full of free food, free drinks, dancing, and fun in the stunning Sax Restaurant in Washington, DC. *RSVPed Event*	The Sax Restaurant, Washington D.C 734 11th St NW, Washington, DC 20001

Thursday, October 16

Radiation Oncology

Start Time	End Time	Session	Room
8:00 AM	9:00 AM	SOTA Talk: Interventional Oncology for RadOncs: How we can help one another! *Chick Weisse, VMD, DACVS*	Palladian Ballroom
9:00 AM	10:00 AM	RO SOTA: Cardiac CT of Heart Tumors: Anatomical Considerations for Radiation Planning *Brian Scansen, DVM, MS, DACVIM*	Palladian Ballroom
10:00 AM	10:30 AM	Break with Exhibitors	Exhibit Hall
10:30 AM	11:30 AM	RO Keynote: From Bedside to Vet Side: Translating Liver Radiation Therapy Across Species *Smith "Jim" Apisarnthanarax, MD*	Palladian Ballroom
11:30 AM	12:30 PM	ACVR Annual Business Meeting Diplomates Only	Regency Ballroom
12:30 PM	2:00 PM	Lunch	
2:00 PM	3:00 PM	RO SOTA: "Exploring uses of radiation therapy for inflammatory and non-neoplastic diseases in cats and dogs" *Tracy Gieger, DVM, ACVR, ACVIM*	Palladian Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall
5:00 PM	7:00 PM	Halcyon Overview, Enhancements, and Dynamic Patient Positioning *Sponsored by Varian, A Siemens Healthineers Company* Please join us to learn about Halcyon enhancements and dynamic patient positioning, presented by Varian. Reception to follow. **RSVP By October 6, 2025 at 5:00pm EDT. RO Only**	VIA ROMA PIZZERIA – DINING ROOM Connecticut Ave NW Washington, DC 20008

AGENDA

Thursday, October 16

Equine Diagnostic Imaging

Start Time	End Time	Session	Room
8:00 AM	9:00 AM	Localisation And Outcome Of Thoracolumbar Vertebral Stress Fracture In Thoroughbred Racehorses Using Nuclear Scintigraphy; *Alexander Chapple* Comparison of Computed Tomography and Positron Emission Tomography to Evaluate Bone Injury of the Metacarpo-/ metatarsophalangeal Joints in Successfully Racing Thoroughbreds; *Sarah Ciamillo* Assessment of the Chondro-osseous Junction and Subchondral Bone Using Ultrashort Echo Time MRI in the Equine Metacarpophalangeal Joint; *Alexandra Scharf*	Ambassador Ballroom
10:00 AM	10:30 AM	Diagnostic Imaging Poster Session and Break with Exhibitors	Exhibit Hall
10:30 AM	11:00 AM	Role of PET with Other Imaging Modalities *Mathieu Spriet, DVM, MS, DACVR, DECVDI*	Ambassador Ballroom
11:00 AM	11:30 AM	The Use of PET in Guiding Diagnosis, Treatment, and Rehabilitation in the Equine Athlete *Kyla Ortved, DVM, PhD, DACVS, DACVSMR*	Ambassador Ballroom
12:30 PM	2:00 PM	Lunch	
1:30 PM	2:00 PM	Industry Insights: Integrated AI and remote monitoring tools drive operational efficiency, imaging accuracy, speed, and uptime across the diagnostic imaging spectrum *Sponsored by Varian, a Siemens Healthineer* *Jason Miller; Senior Director, Veterinary Diagnostic Imaging*	Regency Ballroom

Thursday, October 16

Equine Diagnostic Imaging

Start Time	End Time	Session	Room
3:00 PM	3:30 PM	Break with Exhibitors	
3:30 PM	4:00 PM	Using PET (FDG) for the management of musculoskeletal injury in athletic performance horses *Natasha Werpy, DVM, DACVR*	Ambassador Ballroom
4:00 PM	4:30 PM	Diagnostic workflow considerations for equine PET imaging *Holly Stewart, VMD, PhD, DACVS-LA*	Ambassador Ballroom
4:30 PM	5:15 PM	99.5th Percentile Standardized Uptake Value Measurements (SUV99.5) of 18f-sodium Fluoride Equine Fetlock Background Values Are Less Variable Than Suvmax Measurements; *Alessandra Delucia* Assessment of 18f-naf PET Standardized Uptake Values and Metabolic Volumes for Prediction of Lesion Evolution in Racehorse Fetlocks; *Mathieu Spriet* Validation of a PET Data Based Attenuation Correction Method for the Equine Distal Limb in the Absence of CT Data; *Alessandra Delucia*	Ambassador Ballroom
7:00 PM	1:00 AM	A Night at the Sax - Free food, free drinks, dancing, and fun! *Sponsored by Vets Choice Radiology* Vet's Choice is excited to invite you to their annual party! This year they are hosting a Night at the Sax—an evening full of free food, free drinks, dancing, and fun in the stunning Sax Restaurant in Washington, DC.	The Sax Restaurant, Washington D.C 734 11th St NW Washington, DC 20001

AGENDA

Friday, October 17

General Agenda

Start Time	End Time	Session	Room
7:30 AM	5:00 PM	Registration Open	Regency Ballroom
8:00 AM	9:00 AM	Ultrasound Keynote: Focused Ultrasound Ablation *Joanne Tuohy, DVM, PhD, DACVS*	Regency Ballroom
9:00 AM	10:00 AM	What's Your Diagnosis?: Challenging gastrointestinal and urinary tract ultrasound cases *Chee Kin Lim, DVM, BVSc(Hons), MMedVet (Diag Im), FMCVS (Vet Imaging), DECVD*	Regency Ballroom
10:00 AM	10:30 AM	Break with Exhibitors	Exhibit Hall
10:30 AM	12:30 AM	Image Interpretation Session *Moderators: James Schachtel and Michael Perlini* *Panelists: Jennifer Hickey; François Crevier; Corey Wall and Khalina Frey*	Regency Ballroom
12:30 PM	2:00 PM	Lunch	
2:00 PM	3:00 PM	Utilization of Non-contrast Microvascular Ultrasound Imaging for the Evaluation of Renal Cortical Perfusion in Cats: A Pilot Study; *Amy Todd-Donato* Assessment of Appropriate Nasogastric Tube Placement Using Point-of-care Ultrasound (POCUS) Compared to Thoracic Radiographs; *Winter Herron* Variation in Sonographic Appearance of the Liver in Cats with Lymphomatous Hepatic Infiltration; *Charlee Sturkie* Imaging Characteristics of True Gastro-gastric, Pyloro-gastric, and Duodeno-gastric Intussusception in 21 Dogs and 1 Cat; *Dylan Burton*	Regency Ballroom
3:00 PM	3:30 PM	Break with Exhibitors	Exhibit Hall

Friday, October 17

General Agenda

Start Time	End Time	Session	Room
3:30 PM	4:30 PM	Descriptive Evaluation of Thoracic Radiographs in Dogs with Active Left-sided Congestive Heart Failure from Mitral Valve Chordae Tendineae Rupture; *Seth Locker* Comparison of CT Findings Between Canine Splenic Myelolipomas and Liposarcomas; *Miyu Lee* CT Assessment of Focal Narrowing of the Left Principal Bronchus in Dogs Without Respiratory Disease; *Hana Tsuruta* Imaging Findings of Atypical Lung Lobe Torsion in Four Dogs; *Taichi Kimura*	Regency Ballroom
5:00 PM	6:30 PM	Meet the Residency Program Event	Diplomat Ballroom
7:30 PM	8:30 PM	MedVet and VetRad Resident Mixer at ACVR *Sponsored by MedVet and VetRad* RSVP Required - Resident only Join us for cocktails and small bites during ACVR! We would love to learn more about you and discuss the many ways we can support building your dream career with MedVet and VetRad.	Lebanese Taverna 2641 Connecticut Ave NW Washington, DC

Saturday, October 18

General Agenda

Start Time	End Time	Session	Room
7:30 AM	12:00 PM	Registration Open	
8:00 AM	9:00 AM	ZEWDIS Keynote: Optimizing CT Scanning Protocols for Exotics *David Reese, DVM, DACVR*	Regency Ballroom
9:00 AM	10:00 AM	CT Focus of Rabbit GI *David Reese, DVM, DACVR*	Regency Ballroom
10:00 AM	10:30 AM	Break	
10:30 AM	1:00 PM	Dual Tracer 18f-fdg/18f-naf PET for Assessment of Oral and Maxillofacial Pain: Exploratory Study in 7 Dogs; *Lauren Ayne* The Woodchuck (Marmota Monax) as an Animal Model for Targeted Radiotherapy of Hepatocellular Carcinoma; *Hoda Poorbagher* Low-dose Sedated 18F-FDG Whole Body PET-CT Protocol for Staging of Canine Lymphoma; *Matthew Boscia* Retrospective Anatomic Evaluation and Proposed Endotracheal Intubation Depths for Use in Bonobos [pan Paniscus] Determined by Computed Tomography; *Trevor Pereyda* Computed Tomography of the Gastrointestinal Tract and Pancreas in Cheetahs (Acinonyx Jubatus) Without Small Intestinal Mechanical Obstruction; *Chieh (Genna) Tang* Radiographic Findings in 100 Austrian Laying Hens Suggest Bone Quality Affects Keel Bone Lesions; *Sibylle Kneissl*	Regency Ballroom

AGENDA

Saturday, October 18

General Agenda

Start Time	End Time	Session	Room
10:30 AM	1:00 PM	Giraffe (Giraffa Camelopardalis) Small Intestinal Contractility on Ultrasound; *Carolina Panisello* Computed Tomography Findings in Pigs with Confirmed Abdominal Pathology; *Powell Slinkard* Radiographic and Computed Tomographic Features of the Proximal Gastrointestinal Tract in Ruminants with Functional or Mechanical Obstruction; *Kimberley Sannajust* Ultrasound-guided Cerebrospinal Fluid Collection at the Atlantoaxial Space in Mature Cattle with a Comparative Evaluation of Lumbosacral Cerebrospinal Fluid Collection; *Jeremy Brozek*	Regency Ballroom

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Services; Telemedicine
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Radimal
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Telemedicine
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Exhibitor

Accuray
www.accuray.com

Equipment
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Accuray is committed to expanding the powerful potential of radiation therapy to improve as many lives as possible. We invent unique, market-changing solutions designed to deliver radiation treatments for even the most complex cases — while making commonly treatable cases even easier — to meet the full spectrum of patient needs. We are dedicated to continuous innovation in radiation therapy for oncology, neuro-radiosurgery and beyond, as we partner with clinicians and administrators, empowering them to help patients get back to their lives, faster. Accuray is headquartered in Madison, Wisconsin, with facilities worldwide.

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Antech
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Equipment
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Exhibitor

Asteris
www.asteris.com

Telemedicine; PACS/RIS
Booth 206

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AVTDI
https://avtdi.org/

Other
Booth 102

The Academy of Veterinary Technicians in Diagnostic Imaging exists to promote excellence in the discipline of diagnostic imaging. The Academy of Veterinary Technicians in Diagnostic Imaging will provide a process by which credentialed veterinary technicians/nurses may become recognized as a Veterinary Technician Specialist (VTS) in the field of diagnostic imaging (DI). The veterinary technicians who meet all requirements as a VTS-DI will demonstrate superior knowledge in scientifically and humanely based techniques of diagnostic imaging for all veterinary patients.

Exhibitor

CorridorVet
www.corridor.vet

Telemedicine; Services
Booth 510

CorridorVet is a cloud-based PACS and reporting platform built by veterinary radiologists, for radiologists. It streamlines image viewing, reporting, and case management with fast DICOM access—designed to support teleradiology, mobile radiology, and in-practice specialty teams.

Exhibitor

Cove Animal Health
www.coveanimalhealth.com/

Recruiting
Booth 506

Founded in 1937 as Pieper Veterinary, COVE has grown from a single practice into a thriving multi-state network that combines specialty, emergency, and primary care.

Exhibitor

Dechra
www.dechra-us.com

Pharmaceutical
Booth 103

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Exhibitor

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Equipment
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Exhibitor

Esaote North America
www.esaotevet.com

Equipment
Booth 211

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Exhibitor

Ethos Veterinary Health
ethosvet.com

Recruiting
Booth 403

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Exhibitor

EVG Specialty Network
www.evgspecialty.com

Recruiting
Booth 207

An elite network of high-quality specialty hospitals, collaborating across 5 east-coast locations to elevate patient care and pioneer a new path of veterinary medicine.

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Exhibitor

Golden Hour
www.goldenhourvet.com

Telemedicine
Booth 500

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Exhibitor

HawkCell
www.hawkcell.com

Services; Other
Booth 214

At HawkCell, we focus on the two modalities that matter most—MRI and CT—because they diagnose the hardest cases and change treatment decisions. Our vision is to standardize excellence in veterinary MRI and CT. HawkAI and HawkCT deliver faster scans with zero compromise on image quality; higher efficiency through automation that reduces specialist time, anesthesia duration, and energy use; and superior ROI through lower operating costs and new revenue opportunities. Built by engineers, data scientists, PhDs, and veterinarians working side by side, our systems embed best practice into every workflow so any site can perform at a referral-center level—consistently, safely, and sustainably. We don't just build imaging tools; we elevate clinical outcomes and the economics of care.

Exhibitor

InkSpace Imaging
www.inkspaceimaging.com

Equipment
Booth 401

InkSpace Imaging is a pioneer in revolutionary MRI coil technology, dedicated to transforming the diagnostic imaging landscape. Our advanced lightweight and body contouring MRI receive coils elevate diagnostic imaging by boosting image quality, expediting scans, and enhancing patient experiences by minimizing procedures. Our FDA-cleared 1.5T and 3T coils are compatible with MRI scanners from Siemens Heathineers and GE Healthcare and deliver exceptional results for pediatric, adult, and veterinary patients.

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Exhibitor

medQ
www.medq.com

Services; Telemedicine
Booth 511

medQ offers the best in class workflow automation solutions for Veterinary imaging. We offer an End-to-end RIS and workflow automation designed specifically to streamline operations of midsize and large veterinary practices.

Exhibitor

NorthStar VETS
https://northstarvets.com/

Recruiting
Booth 210

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Exhibitor

Probo Veterinary
https://www.probomedical.com/company/why-probo/veterinary/

Equipment
Booth 208

Probo Veterinary is the world's most customer-focused imaging equipment partner. We provide new and refurbished imaging equipment, world-class service, installation, and expert training, giving you the best options to suit your needs and budget. We supply and service veterinary ultrasound, x-ray, CT, MRI, PET, C-arm, and scopes. It's never just about the machine. We focus on providing you with low-cost diagnostic imaging sales, service, rental and repair so you can focus on what you do best: delivering compassionate, high-quality care.

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Exhibitor

Prognosys Medical Systems
https://prognosysmedical.com

Equipment; Telemedicine
Booth 209

Established in 2004, Prognosys Medical Systems is a leading force in India's digital imaging industry, serving both human and veterinary healthcare. Headquartered in Bengaluru, the company has become a hub for engineering innovation, designing and manufacturing advanced imaging solutions under the ProRad™ brand. Among its specialized offerings is the *Atlas Ultraportable*, a compact and efficient imaging system tailored specifically for the veterinary industry, enabling greater mobility and convenience in animal diagnostics. Prognosys provides a wide range of radiology and fluoroscopy equipment to meet diverse diagnostic needs across sectors. With its commitment to SMART (Safe, Modern, Affordable, Reliable, Trendy) solutions, Prognosys enhances accessibility and precision in medical imaging. Driven by innovation and a deep understanding of clinical and veterinary requirements, the company strives to be your trusted partner in diagnostic imaging for both people and animals.

Exhibitor

Qalibra
https://www.qalibra.com

Equipment
Booth 309

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Exhibitor

RadsForVets
https://radsforvets.com/

Services; Telemedicine
Booth 508

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Exhibitor

roclub Americas
https://www.roclub.com/en/health-organisations#about-roclub

Services, Telemedicine
Booth 502

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Exhibitor

Samsung Healthcare
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Equipment
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Exhibitor

Schwarzman Animal Medical Center
https://www.amcny.org/

Recruiting
Booths 509

Founded in 1910, the Schwarzman Animal Medical Center is the world's largest veterinary teaching hospital, offering compassionate, collaborative, and cutting-edge veterinary care. Our commitment to innovation has led to the creation of one of the most advanced veterinary facilities in the world.

Exhibitor

SignalPET
www.signalpet.com

Services, Recruiting
Booths 105

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Exhibitor

Talkingvet
www.talkingvet.com

Other
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Exhibitor

Timeless Veterinary Systems
www.timelessveterinary.com

Telemedicine; Services
Booth 410

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Exhibitor

Universal Imaging
https://www.universalimaginginc.com

Services
Booth 507

Ultrasound and Digital Radiography Veterinary Solutions. With over 30,000 clients, & 49 years of experience, Universal Imaging Inc. is the trusted industry leader in providing cutting edge diagnostic Ultrasound, Digital Radiography, and CT imaging equipment and superior onsite training & Continuing Education. Universal Imaging partners only with industry leading imaging partners in clarity, and reliability such as Canon, Sonoscape, & Agfa for companion animal or equine practitioners, specialty centers, and Universities. Please visit our website or stop by our booth today, to see how Universal Imaging Inc. can help you provide the highest standard of care for your patients.

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Vet Rocket, LLC
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Telemedicine; Services
Booth 104

Located in the heart of Silicon Valley and founded by digital X-Ray imaging veteran Andy Fu, Vet Rocket develops high-quality digital radiography and software products for demanding veterinary applications. RocketPACS is a complete cloud-based solution for storing, viewing, sharing, and managing your DICOM exams. RocketPACS Radiology Information System is a workflow management system providing Modality Worklist and practice management software integration, as well as comprehensive in-house and teleradiology workflow routing and reports.

Exhibitor

Veterinary Educators and Team Scientists (VETS)
https://imaging-vets.com/

Other
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Exhibitor

Vetology
vetology.net

Telemedicine; Services; Other
Booth 205

Vetology offers practical solutions for veterinary clinics and radiologists. Our platform combines AI radiology reports, teleradiology services, and an AI-assisted prelim report writing platform. Our team of radiologists, technologists, and customer support professionals is dedicated to delivering services that streamline workflows and support quicker, more informed diagnostic decisions. Our innovative approach aims to improve the daily operations of veterinary professionals while enhancing patient care.

Award Category: ACVR RESIDENT

Magnetic Resonance Imaging Features Of Histopathologically Confirmed Intracranial Ependymoma In Dogs

Presenting Author: Alexander R. Chapple, BSc(VetSci)(Hons) BVMS(Hons) MRCVS - University of California, Davis
Co-Author: Kevin D. Woolard, DVM PhD DACVP - University of California, Davis
Co-Author: Eric G. Johnson, DVM DACVR - University of California, Davis

Short Summary: Ependymoma is a rare glial cell tumour of the ependymal lining of the central nervous system (CNS), typically carrying a poor prognosis in dogs. Ependymomata can be histologically diverse in appearance, with debate regarding the exact cell of origin. Previous magnetic resonance imaging (MRI) descriptions of ependymomas in dogs are predominantly from case reports/solitary cases. This was a retrospective descriptive study to report the MRI findings, and where available cerebrospinal fluid analysis (CSFA), in dogs with histologically confirmed ependymomata. Seven client-owned dogs were identified, three of which had CSFA available. Three male-castrated, one male-intact and three female-spayed dogs were included, with a mean age of 9.7 years (range 7-12), mean bodyweight of 17.4kg (range 6.3-40.0kg) and of a variety of breeds. All cases were associated with the ventricular system (third ventricle 3/7, lateral ventricle 2/7, mesencephalic aqueduct 1/7, fourth ventricle 1/7), consistent with prior reports. The identified masses varied in size, shape and solidity. T1w intensity was variable, with hypointensity of fluid cavitations where present. Most of the masses (6/7) were strongly contrast enhancing. Masses were predominantly T2w hyperintense (3/7) or isointense (3/7), but T2w intensity varied from markedly hypointense to markedly hyperintense within masses. CSFA findings were non-specific; two samples showed evidence of mild inflammation, and one was haemorrhagic. Overall, the described general imaging characteristics are consistent with previous reports of ependymoma but demonstrate that the appearance of ependymomata may vary substantially between individual cases and/or subtypes.

Imaging Findings of Atypical Lung Lobe Torsion in Four Dogs

Presenting Author: Taichi Kimura, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Kota Ojima, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Karin Tahara, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Manabu Kurihara, DVM - North Carolina State University

Short Summary: Lung lobe torsion (LLT) is an uncommon but potentially life-threatening condition typically diagnosed by identifying pleural effusion and vesicular emphysema on radiography and computed tomography (CT). However, atypical cases lacking these features present a diagnostic challenge. This retrospective study aimed to characterize the clinical and imaging features of atypical LLT in dogs. One case from Saito Animal Hospital Tomioka Medical Center and three cases from North Carolina State University Veterinary Teaching Hospital (2006–2024) were included, based on the absence of pleural effusion or vesicular emphysema on CT and histopathologic confirmation of LLT. All four cases involved segmental torsion of the left cranial lung lobe, affecting either the cranial or caudal segment. Three cases occurred in young Pugs and one in a Yorkshire Terrier. CT findings included a mildly contrast-enhancing mass, rim enhancement, occasional visualization of pulmonary vasculature within the consolidated lobe, and abrupt tapering of the lobar bronchus and/or artery. Notably, one case was successfully managed medically. Segmental torsion of the left cranial lung lobe may exhibit atypical imaging characteristics, complicating definitive diagnosis by CT. Recognition of these atypical presentations is critical to facilitate early diagnosis and optimize treatment decisions. Further case accumulation is warranted to refine diagnostic and therapeutic strategies and to elucidate potential breed predispositions.

CT Evaluation of Axial Rotation with Tracheal Collapse in Dogs

Presenting Author: Takafumi Kojima, DVM - AMC Suematsu Animal Hospital
Co-Author: Manabu Kurihara, DVM - North Carolina State University
Co-Author: Masahiro Suematsu, DVM - AMC Suematsu Animal Hospital

Short Summary: Tracheal collapse is a common disorder in middle-aged to older small-breed dogs, and in recent years, axial rotation (AR) of the trachea—defined as rotational displacement along the longitudinal axis—has been sporadically reported. However, no comprehensive or systematic studies have been published to date, and its characteristics remain unclear. This study aimed to evaluate the prevalence, diagnostic criteria, and clinical characteristics of AR in dogs diagnosed with tracheal collapse via bronchoscopic evaluation. A retrospective analysis of computed tomography (CT) data from 57 dogs diagnosed with tracheal collapse was conducted to assess the prevalence of AR and its correlation with disease severity. The results showed that AR was identified in 56 of 57 dogs (98.2%) with tracheal collapse, with higher prevalence in more severe cases ($P < 0.01$). AR predominantly occurred in a clockwise direction (47.4–72.0%), and clockwise AR was associated with greater severity than counterclockwise AR (14.0–22.8%) ($P < 0.01$). No rotation (AR angle = 0°) was observed in 14.0–35.1% of cases, with the highest prevalence in the intrathoracic region. Receiver operating characteristic curve analysis determined an AR angle of ≥10° as the optimal diagnostic threshold, highlighting its clinical relevance as a diagnostic parameter (cutoff value: 10.99°, sensitivity: 67.3%, specificity: 76.2%, area under the curve [AUC]: 0.73). This study is the first to define the diagnostic criteria and imaging characteristics of AR with tracheal collapse. Further research is warranted to investigate its correlation with radiographic findings and to elucidate its clinical significance.

Dexmedetomidine Administration and Dose Is Associated with Periportal Halo Sign in Dogs Undergoing Contrast Computed Tomographic Scans of the Liver

Presenting Author: Brady Stutzman, DVM - Texas A&M College of Veterinary Medicine & Biomedical Sciences
Co-Author: Julia Fox, DVM - Ryan Veterinary Hospital, University of Pennsylvania
Co-Author: Lindsey J. Gilmour, DVM, DACVR, DACVR-EDI - Texas A&M College of Veterinary Medicine & Biomedical Sciences

Short Summary: Periportal halo sign (PPH) refers to a hypoattenuating region parallel to the intrahepatic portal system that can be seen on contrast computed tomographic (CT) studies. PPH can be identified in the presence of various diseases, and its significance in veterinary medicine remains unknown. This cross-sectional study with retrospective case selection and prospective image evaluation aimed to determine the prevalence of PPH in contrast CT studies in a large population of dogs, provide a description of the severity of PPH, and investigate the potential association between dexmedetomidine administration and dose with the presence of PPH. Three hundred and thirty-three canine thoracic and abdominal CT examinations were reviewed and included in the final analysis. The prevalence of the PPH was 34.2% (114/333). In more than 98% of the cases, the severity of the PPH was classified as moderate, and in more than 95% of the cases, the severity score ranged between 25 and 75%. Neither the severity of the PPH nor its distribution demonstrated a significant association with dexmedetomidine administration or dexmedetomidine dose. Importantly, both administration of dexmedetomidine (p=0.025) and dexmedetomidine dose (p=0.0218) were significantly associated with the presence of the PPH. Patients with PPH received significantly higher doses of dexmedetomidine (1.7±1.7 mcg/kg) than those without (1.2±1.0 mcg/kg). These findings indicate that dexmedetomidine administration should be a differential for underlying cause of PPH identified in dogs undergoing contrast CT scans of the liver.

Award Category: NON-ACVR RESIDENT

Magnetic Resonance Thoracic Ductography in Dogs Using T2 FASE, Heavily T2 FASE, and SSFP

Presenting Author: Karin Tahara, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Taichi Kimura, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Kota Ojima, DVM - Saito Animal Hospital Tomioka Medical Center
Co-Author: Kenji yodo, DVM - Nippon Veterinary and Life Science University
Co-Author: Yang Qu, Ph.D. in Animal Science, M.S. in Mathematics, B.S. in Veterinary Medicine - North Carolina State University College of Veterinary Medicine
Co-Author: Gabriela Seiler, DVM, DACVR, DECVDI - North Carolina State University College of Veterinary Medicine
Co-Author: Nathan Nelson, DVM, MS, DACVR, DACVR-Equine Diagnostic Imaging - North Carolina State University College of Veterinary Medicine
Co-Author: Manabu Kurihara, DVM - North Carolina State University

Short Summary: Accurate imaging of the thoracic duct is essential for evaluating lymphatic disorders such as chylothorax; however, standardized MRI protocols in dogs remain underdeveloped. This study evaluated and compared thoracic duct visibility, motion artifacts, and overall image quality across cranial, middle, and caudal regions using three MRI sequences: T2-weighted Fast Advanced Spin Echo (FASE), Heavily T2 FASE, and Steady-State Free Precession (SSFP). Twenty-one client-owned dogs undergoing MRI for unrelated reasons were prospectively enrolled. Multiplanar reconstructions were assessed by two blinded, board-certified veterinary radiologists using Likert scales. Statistical analyses included linear weighted kappa, nonparametric repeated measures ANOVA, and calculation of relative treatment effects. Scan times were approximately 2 minutes for SSFP and 5 minutes for both T2 FASE sequences. SSFP consistently yielded lower scores for visibility, motion artifacts, and overall image quality compared to both T2 FASE and Heavily T2 FASE across all regions. T2 FASE provided superior duct visibility in the cranial segment, whereas Heavily T2 FASE performed better in motion-prone areas, particularly the middle and caudal segments. These findings indicate that both T2 FASE and Heavily T2 FASE are practical and effective MRI techniques for thoracic ductography in dogs. High-quality diagnostic images can be obtained in under 5 minutes without contrast medium, supporting the clinical utility of MRI in veterinary settings. Future research should focus on direct comparisons with CT and further protocol refinement, including assessment of chylothorax and identification of anatomical variants.

CT Assessment of Focal Narrowing of the Left Principal Bronchus in Dogs Without Respiratory Disease

Presenting Author: Hana Tsuruta, DVM - Purdue University
Co-Author: Masahiro Murakami, BVSc, MS, PhD, DACVR - Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Purdue University

Short Summary: Focal narrowing of the left principal bronchus (LPB) is a recognized finding in dogs with variable respiratory clinical signs, raising the question of whether this narrowing results primarily from extraluminal compression by adjacent structures or from bronchomalacia. The prevalence and morphologic characteristics of focal LPB narrowing in asymptomatic dogs have not been previously evaluated. This retrospective study evaluated thoracic computed tomography (CT) scans of 68 dogs without respiratory signs to localize focal LPB narrowing, quantify its severity, assess morphology of the narrowing, and investigate correlations with thoracic conformation. Narrowing was identified in 61.8% of dogs, most commonly immediately distal to the LB1 branch. At this location ("Narrow"), 32.3% of dogs had a smaller LPB circumference compared to a distal LPB segment. In addition, 66.2% of dogs had a flattening index (FI) at the Narrow site of less than 0.08 (25% flattening). A moderate positive correlation (r=0.32, P=0.008) and a moderate negative correlation (r=-0.41, P=0.001) were observed between the thoracic height-to-width ratio (H:W) and the degree of LPB narrowing and FI, respectively, suggesting that more severe focal narrowing and flattening occur in dogs with a lower H:W ratio. This study demonstrates that focal LPB narrowing without substantial flattening is common in dogs without respiratory disease, supporting its classification as a benign anatomic variant rather than pathologic bronchomalacia, particularly in dogs with a lower H:W ratio. Recognition of these morphologic features may help avoid overdiagnosis and unnecessary intervention in clinically normal dogs, although further histological confirmation is warranted.

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ACVR | Diagnostic Imaging

Imaging Characteristics of True Gastro-gastric, Pyloro-gastric, and Duodeno-gastric Intussusception in 21 Dogs and 1 Cat

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Short Summary: Retrospective multicenter descriptive study comparing the imaging characteristics of true gastro-gastric (GG), pyloro-gastric (PG) and duodeno-gastric (DG) intussusception in dogs and cats. Cases were allocated to a group (true-GG, PG, DG) based on ultrasound or CT findings, or surgical findings in those with radiographs only. Surgical/necropsy follow-up was reported if available. Twenty-one dogs and one cat aged 7 weeks to 10 years (mean 2.6, median 0.86) were included. Nineteen were male, and three were females with multiple breeds represented. Eighteen presented with clinical signs of vomiting. Eleven were diagnosed with PG intussusception, eight with GG (five greater curvature, three lesser curvature), and three with DG. Seventeen were diagnosed via ultrasound, two via CT, and three at surgery. A rounded mass-like structure in the pylorus was present in all PG and DG with radiographs. Moderate to marked wall thickening was present in all GG and PG cases on ultrasound/CT, mostly affecting the submucosal layer with decreased enhancement on CT. There were overlapping features in PG and DG cases on radiographs and ultrasound. Surgical or necropsy follow-up was available for 16/19 cases diagnosed via imaging, and all GG and one PG cases spontaneously resolved. Two PG cases were confirmed as DG only at surgery/necropsy. Ultrasound and CT were diagnostic of the type of intussusception in most cases. There are some overlapping features of PG and DG intussusceptions on radiographs and ultrasound. Moderate to marked submucosal thickening seen with PG and GG cases may represent edema/congestion. Spontaneous resolution of GG intussusception is possible.

Award Category: ACVR RESIDENT

Assessment of Appropriate Nasogastric Tube Placement Using Point-of-care Ultrasound (POCUS) Compared to Thoracic Radiographs

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Short Summary: Radiographic confirmation is the gold standard for assessing accurate nasogastric tube placement. Radiographs are highly accurate and relatively quick to perform but can involve transportation of ill, critical, and/or oxygen dependent patients. Point-of-care ultrasound (POCUS) is a safe/non-invasive and cost-effective procedure that does not involve radiation exposure and minimal patient handling and manipulation. The objective of this study was to compare the accuracy of POCUS to standard of care radiographs when confirming appropriate placement of nasogastric tubes in dogs. This was a prospective observational study on hospitalized dogs between 2023 and 2025. Fifty-nine dogs were enrolled in the study. All dogs received both a POCUS limited to the stomach to identify the nasogastric tube and the standard of care radiograph to confirm correct placement within the stomach. The POCUS were performed by radiology residents and the radiographs were evaluated by either radiology residents or board certified radiologists to confirm correct placement within the stomach. Time to confirm appropriate nasogastric tube placement was significantly shorter with point-of-care ultrasound compared to radiography. However, the likelihood of visualizing the nasogastric tube on radiographs is higher than POCUS. There was no statistical difference in the ability to identify the nasogastric tube on POCUS with or without the presence of gastric ingesta. Although POCUS can be a useful tool for assessing nasogastric tube positioning, thoracic radiography should still be utilized as the gold standard method for confirming accurate placement.

ACVR | Diagnostic Imaging

Award Category: NON-ACVR RESIDENT

Radiographic Findings in 100 Austrian Laying Hens Suggest Bone Quality Affects Keel Bone Lesions

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Short Summary: The aim of the study was to describe the radiographic findings of keel bone (KB) lesions and to evaluate a relationship between KB density and lesions in 100 laying hens on 2 Austrian farms. The presence of KB fractures or deviations, or compact bone abnormalities was evaluated in lateral radiographs of 100 KBs. The degree of osteopenia was subjectively graded on a three-point scale according to normally thick compact bone of KB (grade 0), thinned or heterogeneous compact bone (grade 1) or double cortical line (grade 2). For objective bone density measurements, pixel values of the KBs were assessed and related to aluminum equivalency (mm Al eq), corresponding to gray shades of a wedge placed in the collimated area. Eighty-five KBs showed either fractures or deviations. One to four fractures per KB were observed in 60 individuals; 54 showed presence of callus. Deviations were seen in 65 hens. Nineteen KBs were classified as grade 0, 44 as grade 1, and 23 as grade 2. Mean pixel values varied from 1449 to 1893, respectively 2.75 to > 4.5 mm Al eq. Mean pixel intensity was inversely related to aluminum wedge steps ($P < 0.001$). No association was observed between the aluminum wedge steps and fractures, deviations or the degree of osteopenia. The prevalence of KB lesions in 100 Austrian laying hens is approximately 85 %. The double cortical line and loss of bone shape in severely affected KBs suggest that reduced bone quality may predispose hens to KB fractures and deviations.

ACVR | Diagnostic Imaging

Comparison of CT Findings Between Canine Splenic Myelolipomas and Liposarcomas

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Short Summary: Canine splenic myelolipomas and liposarcomas are both adipose tissue-containing tumors but differ markedly in biological behavior and clinical relevance. While myelolipomas are benign and often incidental, liposarcoma is a rare malignant mesenchymal tumor requiring more aggressive treatment. Despite frequent ultrasonographic recognition of myelolipomas as strongly hyperechoic, their CT features remain poorly documented, and no CT descriptions exist for splenic liposarcomas. This retrospective, multicenter, descriptive case series evaluated contrast-enhanced CT findings in 13 histologically confirmed splenic myelolipomas and 7 splenic liposarcomas. CT features included lesion size, fat and soft tissue attenuation, margin definition and contour, enhancement pattern, and lesion distribution. Two CT patterns were identified in myelolipomas. Type 1 (n=5) included masses composed predominantly of homogeneous fat or fat mixed with tissue isoattenuating to the spleen or displaying an extramedullary hematopoiesis (EMH) pattern, often with smooth or ill-defined margins. Type 2 (n=8) showed more complex features, with variable fat and non- or poorly-enhancing soft tissue, including nodular or linear/septal enhancement. Liposarcomas typically appeared as large, solitary, irregular masses containing fat and hypoattenuating soft tissue. All showed linear or septal enhancement, and most had nodular or irregular contrast-enhancing areas. Unlike liposarcomas, myelolipomas often included components resembling spleen or EMH and were occasionally multifocal. Although some imaging features overlapped, features such as extremely large size, absence of EMH, enhancing soft tissue components, and solitary distribution were more indicative of liposarcoma. Recognition of these features may aid in preoperative differentiation and support clinical decision-making.

ACVR | Diagnostic Imaging

Descriptive Evaluation of Thoracic Radiographs in Dogs with Active Left-sided Congestive Heart Failure from Mitral Valve Chordae Tendineae Rupture

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Short Summary: Chordae tendineae (ChT) rupture is a recognized complication of degenerative mitral valve disease (DMVD), the most common acquired cardiac disease in dogs. While echocardiography remains the gold standard for diagnosing ChT rupture, the associated thoracic radiographic findings have not been systematically described. This multicentric, retrospective, descriptive study evaluates the thoracic radiographic features in 62 dogs with echocardiographically confirmed mitral valve ChT (mCht) rupture and concurrent left-sided congestive heart failure (CHF).

The study population was predominantly small-breed, older dogs, with Chihuahuas and Shih Tzus notably overrepresented. Most dogs presented with coughing or respiratory distress. On thoracic radiographs, 92% of dogs exhibited left-sided cardiomegaly, characterized by left ventricular and atrial enlargement. The mean vertebral heart score was 11.4, and the mean vertebral left atrial size was 2.8. Pulmonary vein enlargement was observed in 26% of cases, while no dogs had enlarged pulmonary arteries.

Pulmonary edema was common, with 98% of dogs showing a caudodorsal distribution, primarily alveolar and lobar in nature. Notably, an atypical, cranioventral distribution was also prevalent, particularly affecting the right cranial (75.8%) and middle lung (56.5%) lobes. These patterns were frequently alveolar, with both sublobar and lobar involvement.

This is the first study to detail thoracic radiographic findings associated with mChT rupture in dogs with left-sided CHF. The results highlight an atypical pattern of cardiogenic pulmonary edema—characterized by both caudodorsal and cranioventral involvement—that may mimic other pulmonary pathologies, such as pneumonia. Awareness of these radiographic features may aid in the accurate diagnosis and effective management of affected dogs.

ACVR | Equine Diagnostic Imaging

Award Category: ACVR RESIDENT

Localisation And Outcome Of Thoracolumbar Vertebral Stress Fracture In Thoroughbred Racehorses Using Nuclear Scintigraphy

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Short Summary: Stress fracture is an important cause of mortality and morbidity in racing thoroughbreds. Nuclear scintigraphy is the imaging modality of choice for investigating unlocalized stress related bone remodelling in horses. Stress fractures of the caudal lumbar vertebral column have been previously described in both racing Quarterhorses and racing Thoroughbreds post-mortem. There is a lack of literature describing the imaging appearance and predilection sites of thoracolumbar vertebral stress fractures in racehorses ante-mortem. This retrospective single institutional case series describes the appearance and location of thoracolumbar vertebral stress related uptake/fracture in UK racing Thoroughbreds presenting for nuclear scintigraphy due to non-specific lameness over a 10-year period (2009-2019). The caudal lumbar vertebral column was the most common site of thoracolumbar vertebral stress fracture, consistent with previously reported post-mortem findings. The thoracolumbar junction was identified as the second most common site of stress fracture. A positive outcome, defined as return to racing, was present in many horses (65.9%). Patient sex was the only factor associated with outcome, with female patients having a lower likelihood of returning to racing.

ACVR | Equine Diagnostic Imaging

Comparison of Computed Tomography and Positron Emission Tomography to Evaluate Bone Injury of the Metacarpo-/metatarsophalangeal Joints in Successfully Racing Thoroughbreds

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Short Summary: Repetitive stress injury of the metacarpo-/metatarsophalangeal(MCP/MTP) joints is associated with catastrophic breakdown in Thoroughbred racehorses. Surveillance of developing bone pathology may lead to earlier intervention. The objective of this study was to investigate bone injury (BI) in MCP/MTP joints using standing computed tomography(CT) and positron emission tomography(PET). We hypothesized that BI would be more frequently detected using PET and grades would be more severe on PET, compared to CT.

Twenty-four, actively racing Thoroughbred racehorses were recruited. CT and PET were performed on all 4 MCP/MTP joints. CT images were graded for BI from 0(normal)-3(severe). Co-registered PET/CT images with a novel anatomical atlas were used for automatic quantification of uptake. The ratio of SUVmax to SUV background(bgd) was used to grade lesions as follows: Grade 1(mild) $1< x\leq 2$, grade 2 (moderate) $2< x\leq 3$, grade 3 (severe) $3< x$, where x is ratio.

Significantly more sites of BI were detected using PET and significantly more severe grades were detected on PET, compared to CT. BI was most common in the palmar/plantar condyles on both modalities.

The main limitations of this study were the small population of horses at one time point in varying degrees of work and lack of histopathology.

Similar to previous post-mortem studies, BI was most common in the palmar/plantar condyles. PET was more sensitive for detection of BI than CT and may be a useful screening tool for early detection and intervention. CT provides more morphologic detail and can be used to further assess areas of concern on PET.

ACVR | Equine Diagnostic Imaging

Validation of a PET Data Based Attenuation Correction Method for the Equine Distal Limb in the Absence of CT Data

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Short Summary: Attenuation correction based on computed tomography (CT) data is classically performed when using positron emission tomography (PET). Dedicated equine PET scanners for imaging standing horses do not provide CT data. This study aimed to validate an alternative, approximate method for attenuation correction of PET data of the equine distal limb in the absence of CT data. 30 horses previously imaged with both 18F-sodium fluoride PET and CT were used in this study. 10 feet, 10 fetlocks, and 10 tarsi with common pathology were selected. CT-based attenuation correction was used as the gold standard. PET data were used to generate a uniform attenuation map including the entire volume of the limb. Attenuation coefficient of water was used as the baseline (AT1.0) and two incremental coefficients, with 25 and 50% higher attenuation than water, (AT1.25 and AT1.50) were also used for image reconstruction. Maximum Standardized Uptake Values (SUVmax) were measured at sites of increased uptake and compared between the different reconstructions. There was greater attenuation of deeper lesions in the three anatomical regions analyzed. Significant differences were observed between the different attenuation correction maps. Linear regression identified attenuation correction coefficients of 1.327, 1.287, and 1.367 as the best fit for PET based attenuation correction of the foot, fetlock, and tarsus respectively. This study confirmed that a PET-based attenuation correction method can be used to provide reliable attenuation correction of the equine distal limb in absence of CT data.

ACVR | Equine Diagnostic Imaging

Award Category: NON-ACVR RESIDENT

Assessment of the Chondro-osseous Junction and Subchondral Bone Using Ultrashort Echo Time MRI in the Equine Metacarpophalangeal Joint

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Short Summary: Early detection of articular cartilage and subchondral bone pathology is critical for guiding management of joint injury in horses. Ultrashort echo time (UTE) magnetic resonance imaging (MRI) sequences may improve sensitivity for detecting cartilage and osteochondral pathology compared to conventional sequences. The objective was to evaluate the use of high-field, 3 Tesla MRI with UTE sequences for morphologic and quantitative assessment of the articular cartilage and subchondral bone in equine metacarpophalangeal joints of racehorses compared to non-racehorses.

Distal limbs from six Thoroughbred racehorses and five non-racehorses were scanned using 3D isotropic UTE and dual echo steady state (DESS) sequences and 2D proton density weighted (PDw) DIXON sequences in the sagittal plane. The limbs from 4 horses were also imaged with fan-beam computed tomography. Morphological evaluation of the articular surface and histopathology of the subchondral bone pathology was performed. Quantitative analysis included T2* mapping and porosity indices. MRI findings were compared to gross evaluation and histopathology.

UTE imaging showed greater sensitivity for detecting irregularity and partial disruption of the chondro-osseous junction compared to conventional MRI sequences and CT. Complete disruption of the chondro-osseous junction was typically visualized on all modalities/sequences. UTE findings correlated with gross and histopathologic evaluation. Porosity indices correlated to areas with increased or decreased bone on MRI and CT. T2* relaxation maps were inconclusive for the evaluation of cartilage. UTE MRI appears to be sensitive for the detection of small osteochondral and subchondral bone changes that may be more challenging to detect, or even missed, on conventional sequences.

ACVR | Equine Diagnostic Imaging

Assessment of 18f-naf PET Standardized Uptake Values and Metabolic Volumes for Prediction of Lesion Evolution in Racehorse Fetlocks

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Short Summary: Several methods are available for quantification of uptake with positron emission tomography (PET). The goal of this study was to assess different methods for prediction of resolution of uptake in a population of racehorses with fetlock lesions. Twenty-five active racehorses imaged twice with 18F-NaF PET, first at the onset of clinical signs related to the fetlock and 90 days later, after a period of rest, were included. For each site of increased uptake, several measurements were obtained: maximal standardized uptake value (SUVmax), ratio SUVmax/SUVmax background (ratio), Metabolic volumes (MV) using SUVmax background x 1.0, 1.5, 2.0, 2.5 and 3.0 as thresholds (MV1.0, MV1.5, MV2.0, MV2.5, MV3.0) and MV with SUV 5, 10 and 15 as thresholds (MV5, MV10, MV15). Lesions were considered persistent if SUVmax at the 90-day scan was higher than 2 x SUVmax background. ROC analysis was performed to assess the accuracy of each method to predict lesion persistence at 90 days. 180 sites of increased uptake were identified: 156 resolved and 24 persisted. The area under the curve for SUVmax and ratio were 0.63 and 0.72 respectively. MV with thresholds based on SUVmax background performed best with MV2.0 reaching an AUC of 0.76. MV with set thresholds performed best at MV10 with an AUC of 0.64. This study confirms the need to consider SUVmax background either as a ratio or for threshold of MV for prediction of 18F-NaF uptake evolution in the racehorse fetlock. MV has the potential to improve accuracy compared with SUVmax ratio.

ACVR | Large Animal Diagnostic Imaging Society

Award Category: ACVR RESIDENT

Ultrasound-guided Cerebrospinal Fluid Collection at the Atlantoaxial Space in Mature Cattle with a Comparative Evaluation of Lumbosacral Cerebrospinal Fluid Collection

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Short Summary: Currently, two cerebrospinal fluid (CSF) collection sites are used in cattle: the atlanto-occipital space on the neck and the lumbosacral (LS) junction on the back; both techniques have pertinent challenges. An alternative ultrasound-guided CSF sampling technique was recently described in horses, facilitating a lateral approach from the atlantoaxial space (AA) in a standing sedated animal. It was demonstrated to be a safe alternative to LS centesis, but it has not been described in cattle. This pilot study aimed to describe the ultrasound-guided atlantoaxial CSF collection technique in cattle and compare the technical aspects and sample characteristics between the two approaches (AA and LS). Ten healthy beef cows were enrolled in the randomized crossover study, in which two operators performed both sampling techniques on each animal once. The total collection time, number of repositioning events, gross sample appearance, and animal behavior/reactivity were recorded and designated a technical difficulty score. The clinicopathological analysis included total nucleated cell count (TNCC), total protein (TP), and red blood cell (RBC) concentrations. The AA samples had significantly lower RBC, TNCC and TP concentrations compared to the LS samples ($p < 0.0001$, 0.0002, and 0.0285, respectively). No significant differences between the operators were found in cytological and performance data. Aspects of technical difficulty had no significant differences between the different approaches. The findings support that the ultrasound-guided AA CSF technique can be successfully and safely used in cattle with no negative impact on the quality of the collected sample.

ACVR | Large Animal Diagnostic Imaging Society

Radiographic and Computed Tomographic Features of the Proximal Gastrointestinal Tract in Ruminants with Functional or Mechanical Obstruction

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Short Summary: Functional and mechanical obstructions of the proximal gastrointestinal tract in ruminants present diagnostic challenges due to nonspecific clinical signs and overlapping imaging features. This retrospective, multicenter study aimed to describe radiographic and computed tomographic (CT) imaging findings associated with confirmed obstructions caused by foreign material or impactions. Twenty ruminants, comprising of goats, reindeer, deer, sheep, and cows, with a total of 24 imaging studies were reviewed. Imaging findings revealed obstructions primarily localized to the reticulum and rumen, with feed impactions and foreign materials (e.g., bezoars, rope, and plastic) identified as common causes. Radiographs were useful for visualizing certain features but lacked the level of detail achieved with CT, especially for localizing the foreign material and identifying poorly defined foreign bodies or impactions. Challenges encountered during the study included difficulties in distinguishing mechanical from functional obstructions, defining compartmental distension, and determining the significance of foreign materials identified on imaging. This study highlights the utility of CT and radiography in evaluating ruminal obstructions caused by foreign material or impactions, while underscoring the diagnostic challenges in distinguishing mechanical from functional obstructions.

ACVR | Large Animal Diagnostic Imaging Society

Computed Tomography Findings in Pigs with Confirmed Abdominal Pathology

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Short Summary: A retrospective multicenter descriptive study of pigs with contrast-enhanced abdominal computed tomography with confirmation of pathology either via endoscopy, surgery, histopathology, and/or necropsy. Our aim was to describe the abdominal CT imaging findings in pigs with confirmed abdominal pathology. A total of 38 pigs (mean age 5.7 years) were included. Contrast-enhanced CT was performed in all patients with additional diagnostics being endoscopy (4), surgery (28), necropsy (20), and histopathology (18). Anorexia/hyporexia (20), lethargy (14), and vomiting (11) were the most common presenting clinical signs. Gastrointestinal obstruction (11, 4 with gastrointestinal neoplasia), gastrointestinal disease (10), reproductive neoplasia (5), and urinary disease (5) were the most common confirmed pathologies. Other pathologies were of the peritoneal/retroperitoneal spaces (3), neoplasia unrelated to the gastrointestinal or reproductive tract (2), hepatobiliary system (1), and vasculature (1). Normal species specific anatomy was identified including the dorsal gastric diverticulum, torus pyloricus, and location of the ileocolic junction. Definitive differentiation of small versus large intestine can be challenging in pigs; however, common locations of the segments of the intestine are described. The extent of the retroperitoneal space in pigs differs from dogs/cats. Normal anatomy including the torus pyloricus and collapsed small intestine were misdiagnosed as abnormalities in some patients. This study supports the use of contrast-enhanced computed tomography for evaluation of suspected abdominal pathology, and outlines some anatomical differences in this species.

Award Category: ACVR RESIDENT

Dual Tracer 18f-fdg/18f-naf PET for Assessment of Oral and Maxillofacial Pain: Exploratory Study in 7 Dogs

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Short Summary: Positron emission tomography (PET) is most commonly used for oncologic imaging in dogs, however PET is not specific for neoplastic disease. Computed tomography is regarded as the modality of choice for oromaxillofacial imaging in small animals, but only provides structural imaging. The goal of this study was to assess whether the addition of dual tracer PET, using both 18F-Fluorodeoxyglucose (18F-FDG) and 18F-Sodium Fluoride (18F-NaF) to CT would be pertinent for oromaxillofacial imaging in dogs. Seven dogs presenting for assessment of oromaxillofacial pain were prospectively included in this study. Dual tracer PET and CT were performed under a single anesthetic episode using a PET-CT scanner with an extended axial field of view (480 mm). Three dogs were imaged with 18F-NaF first and 18F-FDG second, while the opposite order was used for the other 4 dogs. The main abnormalities identified included a periapical lesion on the maxillary molar tooth, a deep lingual abscess, pterygoid myopathy and marked inflammation of the oropharynx in 4 patients. The other 3 dogs exhibited periodontal disease of various severity. Injecting 18F-FDG first was identified as the preferred order, as the presence of marked 18F-NaF uptake in the alveolar bone tends to mask more subtle gingival 18F-FDG uptake. PET was pertinent at clearly identifying margins of inflamed areas and regional variation for assessment of periodontal disease. We conclude that dual tracer PET-CT can be a pertinent imaging modality for advanced characterization of oromaxillofacial disease.

ACVR | Nuclear Medicine Society

Low-dose Sedated 18F-FDG Whole Body PET-CT Protocol for Staging of Canine Lymphoma

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Short Summary: 18F-fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET-CT) is the standard of care for staging and treatment monitoring of human lymphoma, but its use for assessment of canine lymphoma remains limited. The objective of this study was to evaluate the feasibility and utility of a low-dose sedated 18F-FDG PET-CT protocol for staging canine lymphoma and compare findings to conventional staging methods. Six dogs with lymphoma confirmed with standard staging (radiography, ultrasound, cytology) were prospectively recruited to undergo a sedated whole body 18F-FDG PET-CT. Two MBq/kg 18F-FDG (1/3 of standard dose) was injected intravenously 45 minutes prior to sedation. Scans were performed using a PET-CT scanner with an extended axial field of view (48.3 cm). All scans were completed successfully without general anesthesia. Acquisition times of 3-5 minutes per bed position were used, resulting in total PET scan time of 6 to 12 minutes, depending on patient size. All patients were released within 6 hours of radiotracer injection. PET-CT detected multicentric lymphadenomegaly in all dogs and marked increased 18F-FDG lymph node uptake in all patients with high grade lymphoma, while low uptake was present in a patient with indolent lymphoma. PET-CT identified previously unrecognized sites of pathology in multiple patients (e.g., vulva, splenic nodules, medial retropharyngeal lymph node), and concurrent mammary neoplasia in one dog. PET-CT findings correlated with cytology in liver and spleen and differentiated benign from malignant lesions. Low-dose sedated 18F-FDG PET-CT is feasible, efficient, and informative for staging canine lymphoma.

ACVR | Nuclear Medicine Society

99.5th Percentile Standardized Uptake Value Measurements (SUV99.5) of 18f-sodium Fluoride Equine Fetlock Background Values Are Less Variable Than Suvmax Measurements

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Co-Author: Kathryn Bills, VMD, DACVR, DACVR-EDI - University of Pennsylvania, New Bolton Center
Co-Author: Sergey Anishchenko, PhD - Alienbyte

Short Summary: This study proposes and evaluates SUV99.5, a method for measuring background standardized uptake values (SUVbgd) in positron emission tomography (PET) imaging of the equine distal third metacarpal/tarsal bones (MC/TIII). Traditional approaches to measuring SUVbgd rely on arbitrary two-dimensional regions of interest (ROIs), leading to variability and reduced reliability in lesion grade assessments between observers. By utilizing a predefined three-dimensional ROI, this study introduces SUV99.5, derived from the 99.5th percentile of uptake values, as an objective metric that enhances background measurement accuracy and consistency. A retrospective analysis of 18F-NaF PET data from a 20-case convenience sample of Thoroughbred racehorses compared the newly established SUV99.5 against conventional maximum standardized uptake values (SUVmax). The average SUV range for SUV99.5 at random locations within MC/TIII was found to be 1.30±0.24 and 1.71±0.36 for SUVmax. The average range of SUV for SUV99.5 at various count rates was found to be 2.07±0.16 and 2.93±0.46 for SUVmax. SUV99.5 had reduced variability across ROI locations and qualities of scan, demonstrating its improved repeatability compared to the traditional SUVmax approach. It also highlights the importance of standardizing SUVbgd measurement in equine PET imaging, laying the groundwork for potential automation and more consistent background SUV analysis in clinical and research settings.

The Woodchuck (Marmota Monax) as an Animal Model for Targeted Radiotherapy of Hepatocellular Carcinoma

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Short Summary: About 80% of human and 40% of canine patients with hepatocellular carcinoma (HCC) are diagnosed with advanced disease, with few effective treatment options. Targeted radioimmunotherapy using prostate-specific membrane antigen (PSMA) and somatostatin receptors (SSTRs) is an emerging treatment approach. Woodchuck HCC closely resembles the immune features of human HCC, and the study objective was to evaluate PSMA and SSTRs as imaging and therapeutic targets in this model.

Study animals included 12 WHV-positive woodchucks with HCC. Quantitative reverse transcription PCR for PSMA, SSTR2 and SSTR5 was performed. PET/CT scans were acquired 60 minutes after injection of 40 MBq [68Ga]PSMA-11 and 4.2 MBq/kg [68Ga] DOTATOC. Histopathology and immunohistochemistry (IHC) against PSMA, SSTR 2 and 5 were performed.

Median weight of the animals was 3.6 kg, and median tumor volume was 32.4 cm3. PSMA expression was higher in tumor than liver ($p = 0.02$). On [68Ga]PSMA-11 PET, the tumor SUVmax was higher in tumor than liver in all animals; tumor uptake was focal and varied between animals. Positive IHC staining was present in all tumor samples. Expression of SSTR2 and SSTR5 was not different between tumor and liver ($p = 0.30$, $p = 0.96$, respectively). On [68Ga]DOTATOC PET, one animal had increased uptake in tumor (SUVmax =14.2). IHC staining ranged from absent to strong for SSTR2 and SSTR5 in all tumors.

These findings support further investigation of PSMA-targeted radioligands for imaging and treatment of human, and potentially canine, HCC. The woodchuck model may be useful for studying SSTR-targeted therapies, but in specific animals.

Award Category: NON-ACVR RESIDENT

Utilization of Non-contrast Microvascular Ultrasound Imaging for the Evaluation of Renal Cortical Perfusion in Cats: A Pilot Study

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Co-Author: Manuel Martin-Flores, DVM, DACVAA - Cornell University, College of Veterinary Medicine

Short Summary: Feline kidney disease is a common, clinically important, disease process, with timely diagnosis limited by biochemical markers having low sensitivity for detecting early stages of disease. Renal non-contrast microvascular flow (MVF) ultrasound has recently shown promise for detecting and characterizing kidney disease, outperforming other Doppler applications in people. This study investigated the use of MVF for evaluating renal cortical perfusion (RCP) in healthy cats. Six research cats were placed under general anesthesia, with MVF-based vascular indices (VI) measured on bilateral kidneys (n=12) at normotension (70-100mmHg mean arterial pressure [MAP]), hypotension (< 60mmHg MAP), and borderline hypertension (>100mmHg MAP), as measured by an indwelling femoral arterial catheter. Renal interlobar artery resistive indices (RI) were measured to assess blood pressure effects on renal blood flow. At hypotension, normotension, and hypertension, the VI and RI values were: VI=41.6% (IQR=36.8-46.8) and RI=0.87 (IQR=0.81-0.89); VI=74.6% (IQR=71.4-79) and RI=0.70 (IQR=0.62-0.73); VI=80.4% (IQR=72.3-86.1) and RI=0.59 (IQR=0.55-0.67), respectively. The hypotension VI values were significantly lower than at normotension ($p < 0.0001$) and hypertension ($p < 0.0001$). Normotension VI values were not statistically different than hypertensive VI values ($p=0.12$). The hypotension RI values were significantly higher than at normotension ($p < 0.0001$), and normotensive values were significantly higher than at hypertension ($p < 0.0001$). There were strong correlations between RI and MAP ($r = -0.785$; $p < 0.001$), between VI and MAP ($r = +0.711$; $p < 0.001$), and between VI and RI ($r = -0.751$; $p < 0.001$). Results establish feasibility of MVF assessment of feline RCP for a planned clinical study.

ACVR | Ultrasound Society

Variation in Sonographic Appearance of the Liver in Cats with Lymphomatous Hepatic Infiltration

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Co-Author: Alison M. Lee, DVM, MS, DACVR - Mississippi State University College of Veterinary Medicine
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Short Summary: Lymphoma is the most diagnosed neoplasm in domestic cats, and abdominal ultrasound is often included as a component of the diagnostic plan. Historically, the sonographic appearance of the liver in cats with lymphomatous infiltration has been considered limited in utility due to the sonographic variability seen in prior studies, including a normal appearance. The aim of this study was to determine if changes in sonographic appearance of the liver, as well as the presence of free fluid, lymphadenopathy, and splenic abnormalities during ultrasound examination, would increase the likelihood of diagnosing lymphomatous hepatic infiltration. This combined retrospective and prospective study enrolled 58 cats with lymphoma, 22 with hepatic infiltration and 36 without. In the current population, hepatic echogenicity (hyperechoic: OR=1.4, 95% C.I.=0.3-5.7; hypoechoic: OR=18.9, 95% C.I.=3.4-105.9; compared to isoechoic echogenicity), heterogenous echotexture (OR=4.2, 95% C.I. 1.3-13.3; compared to homogenous echotexture), hepatomegaly (enlarged: OR=5.8, 95% C.I.=1.7-19.3; compared to normal size), and the presence of nodules within the liver (OR=4.2, 95% C.I.=1.2-14.0) were associated with hepatic lymphoma. Abnormal splenic appearance was associated with hepatic involvement (OR: 3.8, 95% C.I.=1.2-12.5). Lymphadenopathy and the presence of free fluid were not significantly associated with hepatic involvement, and both were commonly found in patients in both groups. Age, sex, breed, and weight did not show a significant associated with hepatic involvement. Sampling of the liver is recommended in cats with a clinical suspicion of lymphoma and sonographic findings including a hypoechoic and/or heterogenous and/or enlarged liver, the presence of liver nodules, and/or an abnormal spleen.

ACVR | Zoological, Exotic, Wildlife Diagnostic Imaging Society

Giraffe (Giraffa Camelopardalis) Small Intestinal Contractility on Ultrasound

Presenting Author: Carolina Panisello, VMD - The Ohio State University
Co-Author: Eric T. Hostnik, DVM, DACVR-DI, DACVR-EDI, MS - The Ohio State University
Co-Author: Priya Bapodra, BVetMed (Hons), Msc, Dipl. ACZM, FRCVS - Columbus Zoo and Aquarium

Short Summary: Normal small intestinal motility has not been evaluated in giraffes. The objective of this study was to develop an ultrasound technique for evaluating the small intestine and assess small intestinal contractions in a population of clinically healthy managed giraffes. Nine clinically healthy giraffes (2/9 Giraffa camelopardalis tippelskirchi and 7/9 Giraffa camelopardalis reticulata) participated in this prospective observational study. Three one-minute cine loops were acquired, and the number of intestinal contractions was counted. Maximum and minimum diameters of the small intestine wall (serosa to serosa) and the intestinal wall thickness (mucosa to serosa) were measured in triplicate during contraction and relaxation. The mean small intestinal contractions per minute was 9.87 with a SD of 0.29 (median = 9.84, range 7.67 - 12 contractions per minute). There was no significant difference between the time of day and the number of small intestinal contractions (p = 0.5384). The small intestinal contents consisted of heterogeneous, hyperechoic, nonshadowing material, fluid, and gas. A minimal to mild peritoneal effusion was noted in an average of 5 to 6 patients (average of 5.67) per imaging period. The serosa-to-serosa diameter of the small intestine had an average of 1.96 cm +/- 0.51 (during contraction) to 2.86 cm +/- 0.60 (during relaxation) with a size variation of approximately 31.54% +/- 14% during contractions. The small intestine wall thickness had an average of 0.18 cm +/- 0.048 to 0.22 cm +/- 0.028 during intestinal relaxation and contraction, respectively.

ACVR | Zoological, Exotic, Wildlife Diagnostic Imaging Society

Retrospective Anatomic Evaluation and Proposed Endotracheal Intubation Depths for Use in Bonobos [pan Paniscus] Determined by Computed Tomography

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Introduction:

Appropriate endotracheal intubation in humans is affected by multiple static patient factors and dynamic clinical factors. Gender, height, size, weight, and head and neck positioning may all contribute to variability in orotracheal length (OTL) and tracheal length (TL). Inadvertent endobronchial intubation in primates is occasional across species. The aim of this study is to analyze tracheal anatomy (OTL, TL) in a group of managed adult bonobos and develop a method to plan for appropriate endotracheal tube depths to avoid endobronchial intubation.

Methods:

A group of managed bonobos [Pan paniscus] from XXX were retrospectively and prospectively enrolled. For the retrospective portion, eight head, neck, and thorax CT studies were reviewed to obtain measurements of orotracheal anatomy (orotracheal length – OTL, tracheal length – TL) and endotracheal tube measurements (bottom incisor-to-endotracheal tube tip length – BIETTL, endotracheal tube tip-to-carina distance – ETTCD). The retrospective data were then used to approximate target BIETTL in twelve prospectively scanned bonobos.

Results/Discussion:

There were no endobronchial intubations using our method. Weight can be used as a weak positive correlation to plan for endotracheal intubation lengths between 18cm to 22cm to avoid endobronchial intubation. As a general guideline, an endotracheal intubation maximum length of 19 cm using the mandibular incisors as the landmark (BIETTL) would be at the threshold of acceptable for this study in the patient with the shortest OTL, and would be mid trachea in the largest patient. We will present an endotracheal intubation selection methodology in bonobos to reduce risk of endobronchial intubation.

ACVR | Zoological, Exotic, Wildlife Diagnostic Imaging Society

Award Category: ACVR RESIDENT

Computed Tomography of the Gastrointestinal Tract and Pancreas in Cheetahs (Acinonyx Jubatus) Without Small Intestinal Mechanical Obstruction

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Short Summary: Gastrointestinal clinical signs are common in managed cheetahs (Acinonyx jubatus), and mechanical obstruction is a potential cause. Imaging is crucial for screening obstructive disease. This study evaluates the GI tract and pancreas in non-obstructed cheetahs using computed tomography (CT). A retrospective cross-sectional study was performed. Nine non-obstructed adult cheetahs met the inclusion criteria. Vomiting or diarrhea was reported in 2/9, hyporexia without other gastrointestinal signs in 2/9, and 5/9 cheetahs were imaged for other reasons. Non-parametric statistical analysis was performed. Quantitative and qualitative analysis was performed on different portions of the gastrointestinal tract and pancreas. In non-obstructed cheetahs, mean SImaxA/L5 was 1.5 (range: 1.1-2.5) and mean SIminA/L5 was 0.4 (range: 0.3-0.6). The duodenal wall was significantly thicker than the jejunal and ileal segments ($p < 0.007$). An intramural fat-attenuating layer was present in the gastric wall of 8/9 cheetahs. The pancreatic body was slightly hypoattenuating relative to the left and right pancreatic lobes in the pre-contrast phase ($p = 0.049$); however, there were no differences in post-contrast HUs ($p > 0.05$). Pancreatic contrast enhancement was homogeneous in all scans. The left pancreatic lobe was significantly larger than other portions of the pancreas ($p = 0.0068$ and $p = 0.0322$, respectively). The caudal aspect of the left lobe of the pancreas was nodular in 5/9 cheetahs. The GI and pancreatic CT features described in this study are useful for baseline comparison in cheetahs undergoing CT evaluation.

ACVR | Radiation Oncology

Deep Learning-based Synthetic Computed Tomography Generation from High-field Magnetic Resonance Images for Canine Intracranial Radiation Therapy Planning

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Short Summary: Planning CTs and MRI are often performed sequentially. Synthetic CTs (synCTs) produced by deep-learning algorithms from MRI may enable reduced anesthesia, radiation dose, contrast exposure, and cost while allowing accurate radiation dose calculation. Simulation MR-CT pairs for 12 canine subjects with intracranial tumors acquired within a day, were retrospectively collected. T1-weighted 3 Tesla MRIs with contrast were rigidly registered to CTs using the skull. An unsupervised cycleGAN model (9-block ResNet generator and PatchGAN discriminator) was implemented. To address mismatched anatomy outside the skull, a pixel-wise penalty in the brain leveraging local alignment and mutual information loss was implemented to encourage anatomical fidelity of synCT. Four-fold cross-validation was implemented with data augmentation. SynCT performance within the brain was evaluated against CT using mean absolute error (MAE), peak signal-to-noise ratio (PSNR), and structural similarity index measure (SSIM). Dice similarity coefficient (DSC) and 95% Hausdorff distance (HD95) were computed for the frontal sinus, mandible bone, and oral cavity and pharynx to assess anatomical fidelity. In the brain region, our model achieved high performance with MAE, PSNR, and SSIM of 70±8.1 HU, 29.9±1.05 dB, and 0.85±0.03 respectively. Mean DSC was 0.84±0.05, 0.71±0.05, and 0.71±0.09 a.u. for the frontal sinus, mandible bone, and oral cavity/pharynx, respectively. The corresponding mean HD95 was 3.4, 4.9, and 8.0 mm, respectively. SynCTs agreed well with CT in the brain, although performance was reduced in } bone and oral cavity regions secondary to MRI field of view limitations. Feasibility of generating synCTs from MRI is demonstrated. Future dosimetric comparisons are planned.

ACVR | Radiation Oncology

Coarsely Fractionated Radiation Therapy for the Treatment of 20 Dogs with Neuroendocrine Neoplasms

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Co-Author: Maximilian Korner, Dr. med. vet - University of Zurich

Short Summary: Radiation therapy (RT) is considered for canine neuroendocrine neoplasms (NENs) as an alternative to surgical excision. The purpose of this multi-institutional retrospective case series was to describe the efficacy and tolerability of a 10-fraction coarsely fractionated protocol. The 21 dogs included in the study had a median age of 10 years (range, 4.1 to 13). Most represented breeds were mixed breed dog (n=6), French bulldog (n=4), and English bulldog (n=3). Tumor types included heart base tumor (n=9), carotid body tumor (n=6), adrenal tumor (n=5), and thyroid carcinoma (n=1). All dogs had macroscopic disease at the time of RT, 7 dogs (33%) presented with tumor-related clinical signs. Distant metastasis and lymph node metastasis were present in 1 and 2 patients, respectively. Dogs were treated isocentrically with 10 x 4-4.2 Gy daily (total 40-42 Gy) using 6 MV photons. From 16 dogs with follow up imaging, ORR was 33% (1 CR/6 PR/9 SD) within a median of 4 months (range, 2.4 to 13.8). PFS was 554 days (range, 65 to 912), and OST was 912 days (range, 25 to 1,912). There was no statistical difference in PFS or OST across tumor types. Early adverse events were mild and resolved in 8 out of 9 dogs with symptomatic treatment. Lung fibrosis was a suspected late effect in a patient with chemodectoma. Ten-fraction coarsely fractionated RT was well tolerated and may be considered as a viable alternative protocol for NENs.

ACVR | Radiation Oncology

FLASH Radiation Therapy in Canine Appendicular Osteosarcoma

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Co-Author: Nate Van Asselt, Dvm, dacvr(ro) - UW Madison
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Co-Author: William Thomas, MS - University of Wisconsin-Madison

Short Summary: The FLASH effect of sparing normal tissue utilizing ultra-high dose rate (UHDR) radiation has been documented in several experimental small animal models for various organs including time to skin ulceration, though it has yet to be definitively established in larger animal models such as the dog. A phase I prospective, randomized two-arm trial comparing a single fraction of FLASH UDHR radiation (defined as >50Gy/sec) versus conventional dose rate (CDR) radiation (defined as < 0.1Gy/sec) was conducted for dogs with a cytologically or histopathologically confirmed or suspected diagnosis of appendicular osteosarcoma. The aim of this study was to determine if the FLASH effect could be seen in dog skin. After inclusion, dogs are randomized to receive a single 20Gy fraction of UDHR RT or CDR RT utilizing an IntraOp Mobetron FLASH electron beam linear accelerator. Six dogs were enrolled (3 received UDHR RT and 3 received CDR RT). The skin was monitored weekly for 1 month following radiation and adverse events were graded per VRTOG 2.0. Grade 1 skin toxicity (mild erythema and alopecia) was reported in both arms with one dog who received CDR RT developing grade 2 toxicity. No dogs in either group experienced a grade 3 or higher dose-limiting toxicity of skin ulceration. The small sample size currently precludes statistical evaluation. This study suggests that a two-arm, controlled, prospective trial of a single 20Gy fraction is safe and feasible to assess the FLASH effect. We plan to dose escalate the next cohort of dogs to receive 22Gy.

Five-fraction Daily Hypofractionated Radiotherapy for Localized Nonmetastatic Canine Soft Tissue Sarcoma: Results from a Prospective Clinical Trial

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Co-Author: Dan Regan, DVM, PhD - Colorado State University College of Veterinary Medicine and Biomedical Sciences
Co-Author: Susan M. LaRue, DVM, PhD - Colorado State University College of Veterinary Medicine and Biomedical Sciences
Co-Author: Michael W. Nolan, DVM, PhD, DACVR - North Carolina State University

Short Summary: Hypofractionated radiotherapy is often used to treat canine soft tissue sarcoma but it is unclear what factors predict a favorable response to treatment. To address this knowledge gap, 45 dogs with nonmetastatic localized STS were enrolled into a prospective clinical trial and randomized to receive 20, 27, 33, or 40 Gy in 5 consecutive daily fractions of intensity-modulated, image-guided radiotherapy. Tumor response (RECIST scoring) and radiotoxicity were evaluated 3, 6, 12, and 24 weeks after irradiation. Association between risk of adverse events and dosimetric factors was evaluated with Mann-Whitney U tests, whereas uni- and multivariable Cox proportional hazards models were created to assess the predictivity of patient- (age, weight, sex), tumor- (grade, mitotic count, longest dimension, anatomic location), and dosimetric factors (target volumes, dose to targets and adjacent normal tissues). Five dogs experienced severe adverse events (grade 3 or higher in any category, per VRTOG v2.0), and these were more likely with doses of 33 Gy or more ($p = 0.0249$). However, dose was not significantly associated with local tumor progression-free or overall survival time, and in a multivariable model, the only factors significantly associated with shorter overall survival times were higher tumor grade (grade 1 vs. 2, HR 3.85; $p = 0.0188$), increasing age (HR 1.572, $p = 0.004$) and body weight (HR 1.07, $p = 0.001$). No factor was found to be predictive of local progression-free survival time. Short follow-up limits interpretation, but these results suggest that caution should be used when prescribing 33 Gy or more.

ACVR | Radiation Oncology

Comparative Outcomes of Feline Oral Squamous Cell Carcinoma Treated with Stereotactic Body Radiation Therapy with or Without Concurrent Toceranib

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Co-Author: Mary-Keara Boss, DVM, PhD, DACVR (RO) - Colorado State University Flint Animal Cancer Center

Short Summary: Long-term local tumor control for feline oral squamous cell carcinoma (FOSCC) with radiation therapy has not been achieved. The tyrosine kinase-inhibitor, toceranib, may provide radiosensitization; the safety and efficacy of stereotactic body radiation therapy (SBRT) with toceranib for FOSCC has not been studied. We evaluated outcomes of cats with FOSCC treated with SBRT alone (Group 1) or SBRT with toceranib (Group 2). Clinical data in Group 1 were retrospectively collected and prospectively obtained in Group 2. Progression-free interval (PFI) and median survival time (MST) were calculated using Kaplan-Meier and compared using log-rank test. Radiation toxicity was assessed using VRTOG 2.0. Groups were compared using Fisher's exact test. Five cats in Group 1 and eight cats in Group 2 were included. PFI of Group 1 and 2 was 62 and 67 days ($p=0.43$) and MST of Group 1 and 2 was 236 and 74 days, respectively ($p=0.11$). Grade 4 acute mucosal toxicity occurred in 1/5 (20%) in Group 1 and in 3/8 (38%) in Group 2, and acute bone fracture was not found in Group 1 and developed in 2/8 (25%) in Group 2 ($p< 0.0001$). No late bone toxicity was identified in Group 1 and grade 5 late bone toxicity occurred in 1/8 (13%) in Group 2 ($p=0.0002$). Acute and late radiation toxicities combined were more frequent in Group 2 than Group 1 ($p< 0.0001$). This study suggests SBRT with toceranib does not improve outcomes for FOSCC and may be associated with increased radiation toxicity compared to SBRT alone.

ACVR | Radiation Oncology

Radiation Therapy Combined with ATR Inhibition for the Treatment of Feline Oral Squamous Cell Carcinoma

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Co-Author: Jan Beumer, PharmD, PhD - Johns Hopkins School of Medicine
Co-Author: Yvonne Mowery, MD, PhD - University of Pittsburgh Medical Center
Co-Author: Michael W. Nolan, DVM, PhD, DACVR - North Carolina State University

Short Summary: Radiotherapy (RT) is used for palliation of feline oral squamous cell carcinoma (FOSCC), but prolonged tumor responses are rare and improved treatment approaches are needed. The objective of the study was to evaluate the radiosensitizing effects of the ataxia telangiectasia and Rad3-related (ATR) inhibitor camonsertib in FOSCC. The CCK8 assay and FOSCC cell lines (SCCF3 and SCCF1) were used to assess the impact of camonsertib on cell proliferation, with and without 4 Gy radiation. The pharmacokinetics and maximum tolerated dose (MTD) of camonsertib were characterized in three healthy cats. Later, a pilot clinical trial enrolled 6 tumor-bearing cats to evaluate the combination of camonsertib and RT. Camonsertib reduced cell viability in both FOSCC lines, with 35-55% greater inhibition upon addition of radiation. The dose-limiting toxicities of camonsertib were neutropenia and elevated rectal temperature. The MTD was 5 mg/kg given subcutaneously, with bioavailability of 167%, maximum concentration at 2-to-4 hours, and a half-life of 2 hours. In clinical trial, cats treated with RT alone (8 Gy × 3, 72-hour interfraction interval) experienced no acute radiotoxicity, whereas cats receiving RT plus camonsertib (SC, 90 min pre-RT) developed grade 2-to-3 acute oral mucositis and dermatitis. Four of six cats had a measurable response to RT, and the addition of camonsertib was associated with prolonged progression-free survival (median of 58 days versus undefined, Log-Rank P= 0.058), but no obvious change in overall survival (median 131 versus 139 days, P= 0.43). This study provides preliminary evidence that camonsertib enhances radiosensitivity in cats with FOSCC.

ACVR | Radiation Oncology

Clinical Outcomes Following Stereotactic Radiosurgery and Radiotherapy for Imaging-diagnosed Intracranial Canine Meningiomas

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Co-Author: Michael W. Nolan, DVM, PhD, DACVR - North Carolina State University
Co-Author: Tracy L. Gieger, DVM, ACVR, ACVIM - Cornell University College of Veterinary Medicine

Short Summary: For dogs with intracranial meningioma, stereotactic radiosurgery and radiotherapy (SRS and SRT) have been associated with similar survival outcomes as compared with conventional full-course definitive-intent irradiation. However, an optimal SRS/SRT protocol has not been established. Our institutional approach has been to use 1- or -2 fraction protocols in dogs with relatively small and well-demarcated tumors, and to use a 5-fraction protocol for larger or poorly marginated lesions. The purpose of this study was to assess that approach by comparing the clinical outcomes for dogs treated as such. A retrospective medical records review was performed. Dogs were included if they underwent 1, 2, or 5-fraction SRS/SRT for an imaging-diagnosed intracranial meningioma between 2013 and 2023. Pre-treatment tumor and patient characteristics were compared with Kruskal-Wallis tests or Chi-Square tests. Survival was compared with Kaplan-Meier statistics. The impact of demographic, clinical, and dosimetric factors was evaluated via uni- and multivariable Cox proportional hazards. Eighty-five dogs were treated with 16 Gy x 1 (N=37), 10 Gy x 2 (N=27), or 6 Gy x 5 (N=21). Between treatment groups, there were no significant differences in pre-treatment variables (e.g., age, tumor size/location). The median overall survival time was 427 days (95% CI: 298-566 days). Neither survival nor risk of early-delayed adverse events significantly differed based upon irradiation protocol or patient/tumor characteristics. In this patient population, the tolerability and efficacy of radiotherapy was similar regardless of which irradiation protocol was utilized.

ACVR | Radiation Oncology

Low-dose Radiation Therapy Using Standard versus Low Dose Rate Delivery as a Novel Treatment for Chronic Avian Pododermatitis

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Co-Author: Michelle Borsdorf, DVM, DACZM - University of Illinois
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Short Summary: Avian pododermatitis leads to benign but severe mass-like lesions on the plantar aspect of birds' feet that are difficult to cure and diminish quality of life. There remains an urgent, unmet need for new, non-invasive therapy options to improve quality of life for affected birds. Like other chronic inflammatory and hyper-proliferative diseases treated with low-dose radiation therapy (LDRT), avian pododermatitis involves inflammation, fibrosis, tissue proliferation, necrosis, and opportunistic infections; however, the use of ionizing radiation therapy (including LDRT) has not been investigated for this condition. For this study, 18 white leghorn hens with naturally occurring grade 2 or 3 (moderately severe lesions on a 5-grade scale) pododermatitis lesions were treated with 1.5 Gy/fraction x 4 daily fractions at either 600 cGy/min or 40 cGy/min. Housing and husbandry remained the same before and after treatment. Chickens were euthanized in cohorts of 6 birds every 7 days (3 from each dose-rate group) until 21 days post-LDRT. Feet were assessed grossly prior to LDRT and on the date of euthanasia. Significantly reduced lesion severity ($p < .001$) was noted after 14 days. Within 21 days, all lesions had improved, with 62% of lesions having a near complete response (resolved hyperkeratosis, bruising, ischemia, and most soft tissue swelling). Dose rate did not affect the clinical response. No acute radiation side effects or progression of existing lesions were observed. This study provides preliminary evidence that LDRT could be a useful, non-invasive, sole or adjuvant treatment option for advanced avian pododermatitis in chickens.

ACVR | Radiation Oncology

Biomarkers to Predict and Monitor Response to Radiation Therapy

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Short Summary: Biomarkers can be used for early detection of disease, risk stratification, and monitoring of response to therapy. When used to evaluate patients with cancer, this can result in improved survival time by facilitating early detection and refining treatment regimens. Radiation therapy can result in growth arrest rather than tumor shrinkage, making decisions to continue or alter therapy challenging. The use of biomarkers could improve the ability to predict and monitor response to radiation. We assessed a panel of blood-based biomarkers in 31 dogs undergoing radiation therapy for solid tumors. Serum was collected weekly and assayed for thymidine kinase type 1 (TK-1) as a soluble marker of proliferation, c-reactive protein (CRP) as a marker of inflammation, and isotopic copper (dCu) as a novel cancer biomarker that, when increased, reflects a metabolic shift from cellular glycolysis to oxidative phosphorylation. We found that the median dCu for a group of normal control dogs was 0.53, and in dogs with solid tumors undergoing radiation therapy the baseline median across all dogs was 0.89. Dogs with known good outcome had higher baseline dCu (median 1.23) and tended to have gradual decreasing values when compared to those with known poor outcome (median 0.78), suggesting a better eventual response to radiation in tumors with deranged metabolism but not necessarily abnormal proliferation. Most dogs with low TK1 but high dCu responded favorably to radiation. The combination of TK1 and dCu could add prognostic value and help predict which dogs will respond to radiation therapy.

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Non-irradiation-related Complications in Cats Undergoing Radiotherapy

Presenting Author: Skylar R. Sylvester, DVM, DACVIM (Oncology)—Cornell University College of Veterinary Medicine
Co-Author: Tracy L. Gieger, DVM, ACVR, ACVIM—Cornell University College of Veterinary Medicine

Short Summary: The incidence of non-irradiation-related complications in cats undergoing radiotherapy has not been reported. Medical records of 167 cats receiving radiotherapy under general anesthesia at a single institution (2002-2025) were reviewed. Lymphoma (n=36), injection site sarcoma (n=34), squamous cell carcinoma (n=30), and adenocarcinoma (n=26) were the most frequent cancers with locations of head/neck (n=119) and skin (n=32) most common. The median number of fractions was 6 (range 1-19). The median duration of treatment (calendar days) was 16 (range 1-35). Non-life-threatening anesthesia-related complications (hypotension, bradycardia, arrhythmia, cough, urine retention) occurred in 72 cats (43%). Mild non-anesthesia related complications (gastrointestinal, ocular) occurred in 30 cats (18%). Three cats (2%) experienced treatment delays due to mild complications. The number of fractions (p=0.0403) and pre-existing hypertensive chronic kidney disease (CKD) (p=0.0361) were associated with mild anesthesia complications. There were no factors associated with non-anesthesia-related mild complications. Severe complications (requiring hospitalization) occurred in 19 cats (11%) and were categorized as gastrointestinal (n=8), fever (n=4), anemia (n=3), neurologic (n=3), renal (n=2), cardiac (n=1), endocrine (n=1), and ocular (n=1) complications. Seven cats (4%) had treatment delays due to severe complications and 12 cats (7%) had treatment discontinuation. Weight loss during treatment (p=0.041), pre-existing hypertensive CKD (p=0.0038), receiving concurrent chemotherapy (p=0.0468), and tumor location (p=0.0123) were associated with development of severe complications. Six cats (4%) died during RT due to tumor progression (n=3) or from a severe complication (n=3). In this population of cats, a modest percentage (11%) experienced severe complications that rarely led to death.

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Utility of rhinoscopy in dogs with chronic rhinitis after treatment for intranasal neoplasia with stereotactic radiation therapy

Presenting Author: Tracy Gieger, DVM, DACVR, DACVIM - Cornell University Hospital for Animals
Co-Author: Michael W. Nolan, DVM, PhD, DACVR - North Carolina State University

Short Summary: Following stereotactic radiotherapy (SRT) for intranasal neoplasia, many dogs experience chronic recurrent nasal signs. The utility of rhinoscopy as a diagnostic tool is poorly documented. This retrospective study describes how rhinoscopy has been leveraged at a single institution to attempt to distinguish tumor recurrence from rhinitis (fungal vs. bacterial vs. sterile) and even guide therapy (e.g., pathologic evidence of osteomyelitis may influence antibiotic choice). Of the 168 patients treated with a standardized SRT protocol (10 Gy x 3) from 2013-2025, 12% underwent recheck rhinoscopy at a median of 228 days after SRT (range, 71-228). In 14 dogs, biopsies were performed to further characterize the type of rhinitis. In 6 dogs, deep tissue cultures were obtained to guide antibiotic therapy. In 6 dogs, rhinoscopies were performed to confirm fungal rhinitis and to provide antifungal treatments. At least 1 CT scan was performed on all dogs for restaging purposes and to guide rhinoscopic biopsies (range, 1-12 CT scans/dog). In 19 dogs, a CT scan was performed concurrently with rhinoscopy; in 4 cases, CT documented new/progressive bony lysis adjacent to the tumor, and in 15 cases, CT did not provide additional information beyond what was documented on rhinoscopy. Rhinoscopy is useful in the diagnosis and management of fungal rhinitis and can be used to obtain deep tissue cultures to guide antibiotic therapy. In most cases, a concurrent CT scan did not provide additional information that led to a change in treatment.

ACVR | Radiation Oncology

VET (Veterinary Enhanced Treatment) Stand: A Novel 3D-Printed Device for Reproducible, Artifact-Free Immobilization in Veterinary Radiation Oncology

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Co-Author: Chestha Singh Bisht, n/a - University of Chicago
Co-Author: James J. Sohn, PhD - University of Chicago

Short Summary: Accurate patient positioning and immobilization are crucial for delivering precise radiation therapy in veterinary radiation oncology. This study introduces a novel, 3D-printed bite-block stand designed to improve reproducible patient positioning and eliminate imaging artifacts from immobilization devices. Fabricated from carbon fiber-reinforced PLA, the stand provides high strength, which is critical for ensuring reliable and repeatable patient positioning throughout a treatment course. The 3D-printed design also allows any veterinary clinic with a 3D printer to rapidly reproduce this device, improving accessibility and standardization. The stand was developed to overcome challenges associated with traditional custom bite blocks, which often contain metal parts and utilize high-density dental putties containing high-denisty fillers. These materials cause significant streaking artifacts on CT simulation scans, compromising treatment planning accuracy. The primary research goal was to design, fabricate, and validate a reusable stand made from low-density carbon-fiber polylactic acid (PLA) (ρ = 1.25 g cm−3). To ensure an artifact-free system, the study also quantified the electron density of a problematic putty (3M ESPE Express STD Putty) and identified a lower-density alternative (Surgident Peripheral Wax) for use with the stand. CT analysis confirmed the 3M putty had greater electron density (1204 HU), causing significant artifacts, whereas the Surgident wax was relatively low-density (-125 HU). The 3D-printed stand, when paired with the validated low-density wax, provides a practical and reproducible method for creating artifact-free immobilization devices. This integrated system enhances the precision of radiation treatment planning and offers an accessible solution to improve the standard of care for veterinary patients.

ACVR | Radiation Oncology

Evaluation of vascular expression of PD-L1 and B7-H3 using contrast-enhanced ultrasound

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Short Summary: Immune checkpoint (IC) biomarkers such as PD-L1 and B7-H3 promote tumor immune evasion and are often upregulated in triple-negative breast cancer (TNBC). While immunohistochemistry (IHC) and fluorescence-activated cell sorting (FACS) are standard techniques to quantify these markers, both require invasive biopsies and can yield inaccurate results due to tumor heterogeneity. This study evaluates contrast-enhanced ultrasound (CEUS) with targeted microbubbles (TMBs) as a non-invasive method to detect vascular expression of PD-L1 and B7-H3 in vivo, with validation by IHC and FACS. Biotinylated antibodies for PD-L1 and B7-H3 were conjugated to streptavidin-coated microbubbles and injected into transgenic TNBC mice. CEUS measured differential targeted enhancement (DTE) before and after burst imaging. Tumors were then processed for IHC and FACS. TMB-CEUS showed significantly higher DTE values for PD-L1 (19.0 ± 1.9, $p = 0.001$) and B7-H3 (6.3 ± 1.3, $p = 0.02$) compared to non-targeted controls (1.8 ± 1.4). IHC confirmed elevated PD-L1 (50.8% ± 20.0, $p = 0.03$) and B7-H3 (50.6% ± 15.5, $p = 0.02$), while FACS showed increased expression of B7-H3 (50.1% ± 8.8, $p = 0.007$) and CD31 (13.8% ± 1.3, $p = 0.003$). PD-L1 levels trended higher in FACS but were not statistically significant. These findings support TMB-CEUS as a promising alternative to biopsy-based methods for evaluating eligibility for radioimmunotherapy and support its use in a clinical setting.

ACVR | Diagnostic Imaging

Dual-tracer Positron Emission Tomography Correlates with Structural Imaging of the Equine Hind Proximal Suspensory Ligament and Plantaroproximal Third Metatarsal Bone

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Short Summary: Hindlimb proximal suspensory desmopathy and enthesopathy commonly cause lameness in performance horses. Dual-tracer positron emission tomography (PET) is a promising imaging modality for detecting areas of bone modelling and soft tissue injury, which can be performed in the standing horse. The objective of this study is to evaluate the association between cone-beam CT (CBCT) findings and 18flourine sodium fluoride (18F-NaF) uptake in the plantaroproximal third metatarsal bone (pMTIII) and the association between ultrasound (US) findings and 18fluorine fluorodeoxyglucose (18F-FDG) uptake in the proximal suspensory ligament (PSL). We hypothesized that these paired imaging modalities (CBCT and 18F-NaF PET, US and 18F-FDG PET) would strongly correlate with injury severity. Images of limbs (n=25) from 18 horses that underwent distal tarsal and proximal metatarsal dual-tracer PET and structural imaging (CBCT=13, US=20, or low-field MRI=8) were included. Semi-objective grading of structural modalities was performed by one of two ACVR-EDI diplomates blinded to clinical information. There was a moderate (r=0.585) positive correlation between US PSL grade and objective measures of 18F-FDG radioavidity (95% CI 0.179-0.821) and excellent (r=0.84) positive correlation between CBCT pMTIII grade and objective measures of 18F-NaF radioavidity (95% CI 0.525-0.953). All limbs with PSL grade >0 on MRI had increased 18F-FDG PSL radioavidity. These findings support the hypotheses that structural changes of the equine hindlimb proximal suspensory apparatus have moderate-to-excellent correlation with functional imaging modalities and support further investigation of dual-tracer PET for simultaneous evaluation of osseous and soft tissue structures of the proximal metatarsal region in the standing horse.

ACVR | Diagnostic Imaging

A Multicentre Computed Tomographic and Clinical Study of Nasal Cavity Involvement in 1600 Horses with Sinus Disease

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Short Summary: The use of computed tomography for the evaluation of horses with sinonasal disease has allowed more accurate and specific diagnoses to be achieved in this anatomically complex region. The aim of the current study, which is part of an ongoing larger clinical and imaging study, was to gain clinical and imaging information on a large number of equine sinus disease cases from multiple equine clinics, all of which had received head CT imaging, to allow more accurate information to be obtained on nasal cavity involvement in equine sinus disease. Clinicians and imagers from 20 referral clinics (11 in UK; 3 in Belgium; 3 in Sweden, 2 in USA, one in Ireland) contributed clinical and imaging data on horses with confirmed sinus disease that had CT imaging. 1600 horses suffering from sinus disease, all of whom have had CT imaging, have been recruited to the study. Data analysis is ongoing and at present 134 of these 1600 cases have been diagnosed as having bilateral sinus changes, some subclinical. Dental sinusitis was the most common cause of equine sinonasal disease, followed by primary sinusitis, sinus cyst, progressive ethmoid haematoma, traumatic sinusitis, oro-maxillary fistula and sinus tumours. Nasal conchal bullae (NCB) had some type of change in 958/1600 (59.9%) of affected horses. The middle nasal meatus had changes in 502 (31.4%) cases. The high prevalence of NCB and middle meatus changes in horses with sinonasal disease supports the proposal that these disorders should be termed sino-nasal diseases.

ACVR | Diagnostic Imaging

Osseous pathology as an Uncommon Manifestation Of Equine Idiopathic Systemic Granulomatous Disease (Sarcoidosis)

Presenting Author: Devon DiBello, VMD - Kansas State University

Short Summary: Equine Idiopathic Systemic Granulomatous Disease, also known as Equine Sarcoidosis, is a rarely reported multicentric inflammatory disease affecting horses. The disease is generally considered to be caused by an exaggerated immune response to an antigenic stimulus and presents granulomatous nodular formation throughout numerous body systems. To date, there is no definitive causative agent. Involvement of nearly all organ systems has been documented in horses, most commonly within the integumentary, pulmonary, lymphatic and gastrointestinal systems, with isolated reports involving the musculoskeletal system. In humans, sarcoidosis is a well-recognized disease with rare cases of osseous involvement, most characteristically appearing as phalangeal cystic osteitis in asymptomatic patients. In generalized equine sarcoidosis, reports of osseous involvement are limited to descriptions of radiographic findings including periosteal reaction and bone marrow involvement, with a more recent case of hypertrophic osteopathy. In this case of a mature Quarter Horse mare diagnosed with a progressive form of equine sarcoidosis, novel radiographic and computed tomographic findings of multifocal, polyostotic, variably aggressive osteolytic lesions are found throughout the axial skeleton, correlated with histopathology to represent additional sites of granulomatous inflammation. The osteolytic lesions were discovered incidentally and not obviously correlated to lameness in this mare, suggesting that as observed in humans, these lesions may be indolent in horses. In summary, diffuse osteolysis is a novel finding in equine sarcoidosis, highlighting a potentially under-diagnosed feature of this multicentric disease; further investigation is warranted in affected horses to determine its prevalence and clinical relevance.

ACVR | Diagnostic Imaging

Contrast-Enhanced MRI with Gadoxetate Disodium Reveals Malignancy in a Hepatic Nodule with Benign CT Features in a Dog

Presenting Author: YeunHea Lee, DVM - VCA West Coast Specialty and Emergency Animal Hospital
Co-Author: Jin Heo, DACVR, MS, DVM - VCA West Coast Specialty and Emergency Animal Hospital

Short Summary: Accurate detection of hepatic malignant lesions is essential for appropriate treatment planning in veterinary oncology. This case report illustrates the value of gadoxetate disodium-enhanced MRI in a dog with multiple liver lesions. While CT identified a large mass and additional nodules, the nodules were initially interpreted as benign. MRI, particularly the hepatobiliary phase, revealed hypoenhancement in all lesions, raising suspicion for malignancy. This case highlights the superior lesion characterization of hepatobiliary-specific MRI compared to CT, demonstrating its ability to detect intrahepatic metastasis or multiple primary malignancies. The imaging findings directly impacted clinical management, guiding the decision toward radiation therapy instead of surgical excision. This case illustrates the value of hepatobiliary-specific MRI in improving diagnostic confidence and treatment planning for dogs with hepatic malignant neoplasia.

Teaching Points

- Gadoxetate disodium-enhanced MRI could provide superior detection and characterization of hepatic lesions compared to conventional CT imaging in dogs.
- The hepatobiliary phase of contrast enhancement is useful for distinguishing between benign and malignant hepatic lesions.
- MRI with hepatobiliary-specific contrast agents can impact treatment decisions in canine hepatic neoplasia cases.

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ACVR | Diagnostic Imaging

Neurologic Imaging Signs and Concurrent Neural Pathologies in Dogs and a Cat with Syringohydromyelia

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Short Summary: The aim of this retrospective study was to describe the neurologic pathology and localization associated with syringohydromyelia (SHM). The medical archive was searched for patients with continuous intramedullary linear T2 hyperintensity involving at least 3 vertebral segments. Eighteen dogs and one cat were included in the study. Patients ranged in age from 4 months to 13 years (median 5.8 years). The main breeds represented were Cavalier King Charles Spaniel (n=6) and French Bulldog (n=5). The most common distribution of SHM was from the cervical to the lumbar spine (n=16). Concurrent neural pathology in animals with SHM was most commonly found in the brain (8/19), followed by cervical (3/19), lumbar (3/19) or thoracic (2/19) location. In three cases, the main imaging finding contributing to SHM was unclear. Chiari-like malformation (n=6), intracranial (n=1) or intramedullary mass (n=2), compressive disc lesion (n=4) and a subarachnoid diverticulum (n=1) were compressive lesions associated with SHM. Myelitis (n=1) and post-operative complication after disc surgery (n=1) were non-compressive lesions associated with SHM. Notably, in three patients with SHM extending over multiple medullary segments, the main imaging finding was a cranial, respectively cervical, neoplasm. In conclusion, SHM is more likely to result from congenital malformations or acquired obstructions. Less common causes are inflammatory or post-operative. Dogs with cranial or high cervical masses (n=3) may present with SHM extending from cervical to lumbar medullary segments; in these rare cases a change from lumbar to cranial imaging may be required to document the lesion responsible for the SHM.

ACVR | Diagnostic Imaging

Lesions That Involve the Cribriform Plate: A Retrospective Study of 148 Dogs and 28 Cats (2008-2025)

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Short Summary: The cribriform plate is a section of perforated ethmoid bone that separates the cranial vault from the nasal cavity. Damage or malformation of this structure can result in neurologic signs and worsened prognosis. This study aims to describe the cross-sectional imaging features of mass-like lesions that invade the cribriform plate, as well as expound upon the different types of lesions that can result in or are a sequela of cribriform damage/malformation. The CT and MRI database of the University of Tennessee College of Veterinary Medicine was searched for dogs and cats with cribriform plate lysis/thinning. Of 148 dogs, 121 were diagnosed with neoplasia (82%) and 27 (18%) with non-neoplastic disease (congenital/developmental, inflammatory, traumatic, other). Neoplastic lesions included 88 carcinomas (73%), 17 sarcomas (14%), 6 round cell tumors (5%) and 6 other neoplasia (5%). Of 28 cats, 24 were diagnosed with neoplasia (86%) and the remainder (n= 4; 14%) had inflammatory disease. Neoplasms included 15 lymphomas (63%), 5 carcinomas (21%), 2 sarcomas (8%), and 2 non-specific neoplasms (8%). In both dogs and cats, carcinomas were more heterogeneous (pre- and post-contrast) with moderate to strong contrast enhancement. Round cell tumors in cats were majorly homogeneous on both pre- and post-contrast imaging with mild enhancement on CT. There was otherwise overlap in imaging features between different types of neoplasia and between neoplastic and non-neoplastic mass lesions. This study provides information on different diseases that can involve the cribriform plate which may guide clinical decisions and aid in diagnosis.

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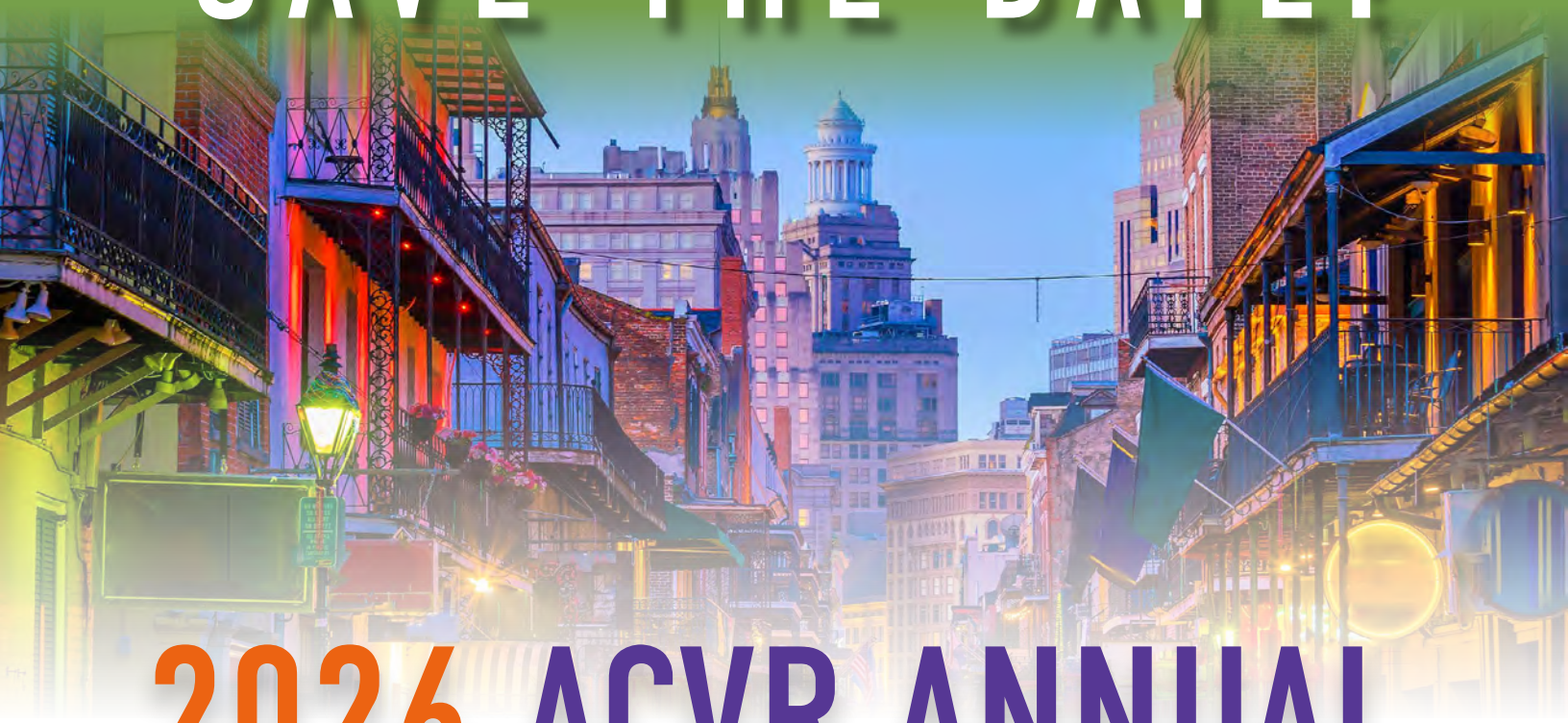

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