

Improving ‘standards of care’ in CT for animals: split-bolus single-pass multi-phased abdominal CT

Aquilion™ CT scanner enables specialist veterinary practice in the Netherlands to develop an innovative split-bolus contrast technique with the potential to become a new standard in veterinary medicine.

Veterinary medicine has advanced enormously in recent years. With veterinarians now able to diagnose and treat a broader range of diseases than ever, specialist practices, like ‘De Kompaan’ – a referral-only clinic in Ommen, the Netherlands – must stay on top of new developments in imaging. Investing in a refurbished Aquilion 16-slice CT scanner from Canon Medical Systems has brought many benefits to the clinic, its patients and their owners. Notably, it has enabled Rob Gerritsen, Veterinary Internist and Owner of De Kompaan, to develop an innovative split-bolus contrast technique, which combines multiple phases into a single scan. Positive results from initial trials suggest that this technique has the potential to become a new standard in veterinary medicine.

A Promising New Advanced Technique

Multi-phasic contrast-enhanced abdominal CT is used routinely in human medicine to visualize hyper- and hypo-vascular tumors,

hemangiomas and urinary-tract disease. In human applications, the technique involves administering a bolus of contrast to the patient and performing multiple scans at set time-points.

Unfortunately however, this procedure is complicated to perform on animals. Repositioning the scan table takes time and poses a problem, especially with small animals, because general anesthesia is required, preferably with respiratory arrest (‘breath hold’) to ensure high-quality imaging.

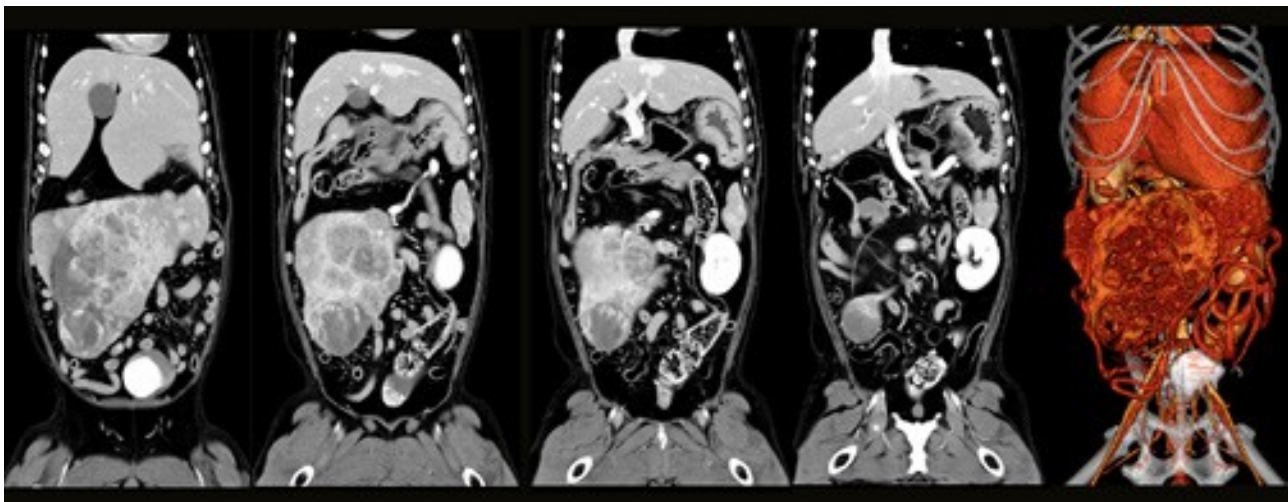
As a result, a single phase scan only is often performed in veterinary practice (with the exception of university clinics that might scan for research purposes).

Rob realized that a modified split-bolus contrast technique, already used in human medicine, combining multiple phases into one single scan, could eliminate these problems for veterinarians. He developed a weight-related veterinary protocol

for ‘split-bolus single-pass bi- and tri-phasic CT’ at De Kompaan, together with John van Gulik, Application Specialist at Canon Medical Systems Europe. While research into this new application continues, the initial results are promising.

Rob anticipates that visualizing multiple hemodynamic phases in a single scan using this ‘new’ technique could become a standard in veterinary medicine in the near future.

“Our protocol could be particularly useful in diagnosing and treating animals with oncology issues,” he said, “since the full hemodynamic spectrum of a tumor process is revealed, as opposed to current conventional single phase scanning, which shows either the (hepatic) arterial -, the portal venous -, or the delayed phase. Of course, the split-bolus single-pass contrast technique can contribute to improved diagnosis, treatment and more reliable prognoses for animals with vascular anomalies or pulmonary embolism too.”



Some first results of a split-bolus single-pass triphasic CT-scan in an 11 yr old mixed breed (Bernese mountain dog).



Rob Gerritsen, Veterinary Internist and Owner of De Kompaan, Ommen, the Netherlands (right) and John van Gulik, European Application Specialist, Canon Medical Systems Europe (left).

Veterinary CT: A Tool ‘Here to Stay’

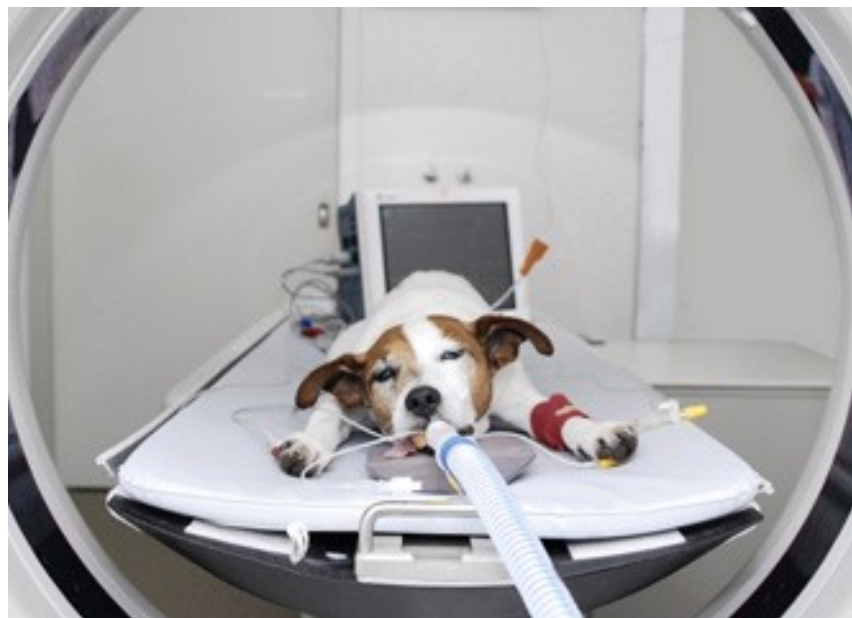
Alongside advancing research, the Aquilion CT scanner offers many additional benefits in daily practice at De Kompaan. Animals with suspected neurological disease, thoracic or pulmonary problems or malignancies benefit the most from the availability of the system at Rob’s clinic.

In these cases, CT scanning completes the diagnostic work-up. Teleradiology services provide a possibility for CT-scans to be interpreted long-distance and at short notice by veterinary radiologists. They can help veterinary internists solve puzzles and enable veterinary surgeons to prepare operations and procedures with greater accuracy. On top of this, incidental scan findings can shed light on possible breed-specific problems that have existed for a long time, and consequently lead to new hypotheses.

Importantly, they also give pet owners the opportunity to make better informed decisions. Pet healthcare insurance in many European countries, including the Netherlands, is still an exception to the rule. As a result, for many owners, proper treatment and examination of a seriously ill pet remains something of a cost-benefit

trade-off, no matter how much they love their pets. It is essential for a referral-only clinic, like De Kompaan, to provide a diagnostic overview and results to referring colleagues and their clients quickly, so that the owner’s (financial and emotional) budget

is spent wisely and the best result possible is obtained under the circumstances. In addition, to gain time and start treatment as early as possible, a significant part of the diagnostic work-up at De Kompaan is completed the day of the admission.



Jack Russell terrier diagnosed and treated for renal tumor.

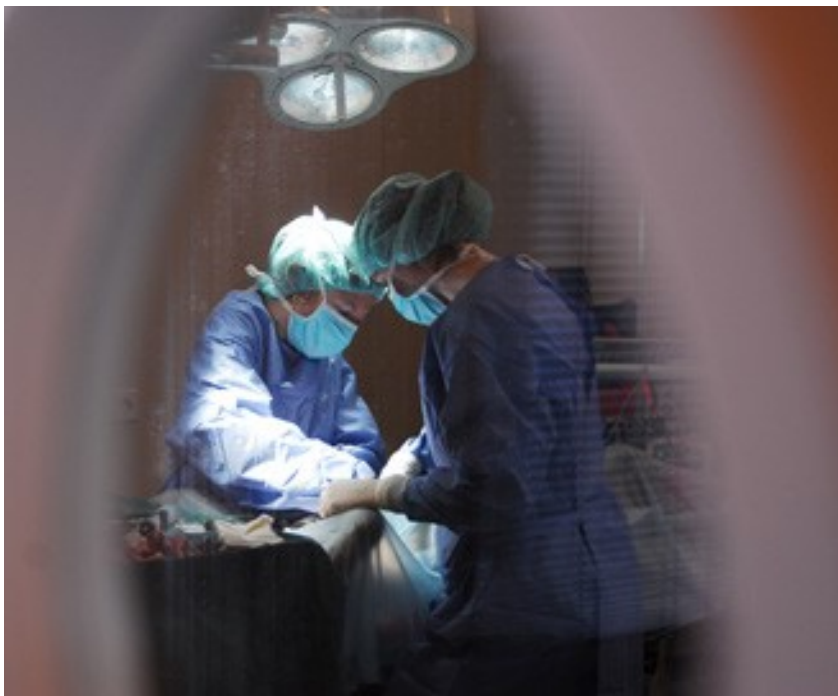


Diagnostics: Never Stop Questioning

It was quite a decision for Rob to invest in the Aquilion CT scanner in 2014. However, he was well aware that taking his practice to 'the next level' required advanced equipment and

a willingness to explore adjacent disciplines. At that time, the Aquilion was the most advanced veterinary CT scanner used in the Netherlands, and Secondlife (a refurbishment program of Canon Medical Systems Europe) made acquisition of the system possible.

"CT has been around for a while in veterinary medicine, especially in diagnostics for horses and companion animals, but the Aquilion CT scanner brings us brand new possibilities and enables us to do much more exciting work than just routine imaging," Rob concluded.



De Kompaan

Rob Gerritsen began practicing as a Veterinary Specialist (dipl KNMvD) in the early 1990s. He founded 'De Kompaan' (Dutch for 'companion') as a referral-only veterinary clinic in 1997, at a time when specialist veterinary services for pets were still rather rare. His curiosity early on took him from echo(cardio)graphy to blood-banking, and from gastro-intestinal examinations to CT. His clinic offers a full spectrum of internal medicine services as well as thoracic- and soft tissue surgery. De Kompaan is one of a few veterinary clinics in the Netherlands to offer pacemaker implants and is about to start interventional cardiology. //