Medical Xpress

Reduction of contrast medium volume and radiation dose in CTA scans

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Wouter Nijhof obtained his PhD at the University of Twente for the research he conducted in collaboration with the Radiology department at the Jeroen Bosch Hospital in 's-Hertogenbosch. The results of his PhD thesis can almost directly be applied in nearly every hospital. Dr Nijhof showed that a CTA scan (a scan of the arteries) can be performed with a contrast medium volume reduction of up to 75% and up to 50%

reduction in radiation dose. CT scans using contrast medium are the third most common cause of acute renal failure and renal insufficiency as a result of hospital treatments. The health benefits that Nijhof's research can bring are therefore enormous.

The implications of his PhD research are clear. In the Netherlands, between 1 and 1.5 million CT scans are performed using iodinated contrast media, of which 10% are CTA scans.

Increasingly smaller risks

Patients with the presence of an aneurysm are particularly at risk of renal failure or renal insufficiency because they will receive check-ups using CTA scans for the rest of their lives. However, the results of this research are great news for other patients as well. Reducing the volume of contrast medium can also offers the option of doing CTA scans for people with poor renal function which is not possible at present due to the health risks involved. In addition to that, radiation exposure as a result of CT scan X-rays can be reduced by 50%, making the risks involved of having a CTA scan even smaller."

Image quality remains good

"In this research, we tried to find the lower limits of what was possible," says Wouter Nijhof. "It takes a few years of working with these procedures, and then you can draw definite conclusions about the benefits. What's important is that we are raising awareness about the risks involved in taking CT scans with contrast media. My research shows that a CTA scan of the aorta can be performed using a significantly lower amount of contrast medium and reducing radiation dose without negatively affecting the image quality. My PhD thesis may be a good start for follow-up research into whether the reduction of the

contrast media volume and reduced radiation exposure could also be used for CT scans using contrast media in other anatomical areas or organs."

Provided by University of Twente