Taipei Zoo Panda Is First in the World to Get Special Kind of Heart Exam

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Taipei, May 20, 2019—Suppose that doctors want to check on your health by taking a look at your heart. From inside your body. Fortunately, they can do that without cutting anything. They can take an echo-cardiogram.

To imagine what it’s like to have one, try this: Tilt your head back, chin pointing up (yes, just like the panda in the photo, if you’ve noticed). Now your throat and airway are nice and open. You’ll have taken some medication that makes you feel very relaxed and comfortable (though the panda in the photo is completely asleep). They now slowly and carefully slide a thin tube into your esophagus—the pipe that you use to swallow food. The tube is equipped with a tiny transducer.

A transducer is like a camera but one that uses sound waves instead of light. Ultrasound technicians move a transducer around the outside of a woman’s stomach to get images of a fetus.

Thankfully, it’s a much smaller transducer that gets slid through your mouth and down your esophagus until it’s right behind your heart. From there, it can take pictures using sound waves that travel through the wall of your throat, bounce off structures...
of your heart and surrounding blood vessels, and return back to the machine as echoes. The time that the sound waves travel can be measured and turned into very clear pictures, videos, and even into data that can track how your blood moves, how your heart valves open and close, and etc.

You will have had a transesophageal echocardiograph.

When Tuan Tuan, a giant panda who lives at the Taipei Zoo, needed to have a tooth repaired in December of 2019, his veterinarians and care team decided to also give him a transesophageal echocardiogram while he was under anesthesia and unconscious. Anesthesiologists from National Taiwan University Hospital and veterinarians from the Taipei Zoo teamed up to perform the echocardiography.

At 8 years, Tuan Tuan is reaching the age where he has a higher chance of getting some of the same heart problems that people do: narrowing and hardening of the arteries, abnormalities of the heart valves, abnormalities with the way that blood moves through the heart, and problems with the health of the heart muscle. Another reason for the examination was to look for signs of infection with parasites, like worms, that can be transmitted by mosquitoes.

If signs of a problem had been found, Tuan Tuan could likely have received early treatments to protect his health. Tuan Tuan’s health, like the health of all pandas, is especially important because pandas are a vulnerable species. Scientists think that fewer than 2,000 are living in the wild with about 300 more living in captivity.

The team described the procedure, why they wanted to do it, and the results of the exam in the current issue of the Asian Journal of Anesthesiology. In people, doctors and scientists use two kinds of procedures to get echocardiograms of the heart. One is called transthoracic echocardiography (TTE) and the other is called transesophageal echocardiography (TEE). TTE is usually easier, because the transducer doesn’t need to go inside the body, but is placed on the skin on the surface of the chest (thorax). There are some limitations with the use of TTE, however. For example, the sound waves must travel through a thick layer of fat that adult pandas have between their skin and heart. That degrades the quality of the images that can be obtained. As far as we know, this was the first time that TEE was used on a giant panda.

This story has a happy ending. The team was able to get a good look at Tuan Tuan’s heart and found that everything seems to be just fine.

The paper that the team produced can help other scientists who study or work with pandas or other bears or animals. With regard to the team’s work, Nigel Caulkett, professor of anaesthesiology and faculty member of the Department of Veterinary Clinical & Diagnostic Sciences at the University of Calgary, remarked: “I think it is of interest because there is a paucity of information regarding ultrasound imaging in bear species”. Professor Caulkett further commented that for this reason, “the data may be useful to individuals who need to evaluate cardiac function in this highly threatened species.”

With his heart appearing to be in tip-top condition, let’s hope that Tuan Tuan lives a long healthy life with his mate and their cub.

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Panda Gets Heart Exam