

First-of-Its-Kind Surgery Gives Mini Donkey New Life

Nix, an adorable miniature donkey, began having collapsing episodes at only a few months of age. Faced with the prospect of euthanasia simply because the parts of her heart weren't communicating with each other, her owners made a bold decision that'd allow her to live out her life to its fullest.

Analysis by Dr. Karen Shaw Becker

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STORY AT-A-GLANCE

- When she was just a few months old, a mini donkey named Nix began having collapsing spells and lethargy
- Nix's condition grew worse over the next several months, until she was falling from a standing position, had generalized weakness, and severe exercise intolerance
- At the Cornell University Hospital for Animals, Nix was diagnosed with third-degree atrioventricular block that was causing a pathological arrhythmia; due to its severity, the Cornell team recommended either a pacemaker, or euthanasia
- Nix was a good candidate for a pacemaker, and it was decided to implant the device in a first-of-its-kind surgery for Cornell
- Nix is now home and healing well, and if the pacemaker continues to operate without complications, the lucky little donkey will be expected to live a normal life

"When she fell, she was dazed for a few seconds and then would get back up. Several times she fell and rolled out of the pasture fence, which caused us even more concern for her safety," Carlton Lockwood told the Cornell Chronicle.¹

Diagnosis: A Dangerous Pathological Arrhythmia

Nix was taken to Cornell University Hospital for Animals for an echocardiogram and an ECG to record her heart's rhythm. Based on the results, the veterinary team diagnosed Nix with third-degree atrioventricular block — the atria and ventricles of her heart weren't communicating, resulting in a very slow and irregular heart rhythm.

The tests revealed frequent pauses of 20 to 30 seconds during which there were no heartbeats or blood flow to her body, which enlarged her heart. The insufficient blood flow to Nix's brain and around her body for long periods resulted in episodes of collapse, weakness, and severe exercise intolerance.

There are two categories of arrhythmias, physiological and pathological. Physiological arrhythmias occur normally when animals such as horses and donkeys are relaxed, but disappear with stress, excitement, or exercise. Pathological arrhythmias like Nix's are abnormal and dangerous.

“This is a pathological arrhythmia that we see pretty uncommonly in horses, but a little more occasionally in donkeys, and especially mini donkeys,” said Dr. Katharyn Mitchell, assistant professor in the Section of Large Animal Medicine, who oversaw Nix’s case at Cornell.

While the condition occurs more frequently in miniature donkeys than larger animals, it’s still considered rare. Given the severity of Nix’s arrhythmia and the frequency of collapse, Mitchell’s assessment was that she had only two choices — a pacemaker, or euthanasia, since her collapsing episodes would inevitably result in further self-trauma.

The good news was that because Nix was so young and had no other underlying problems, she was an excellent candidate for a pacemaker.

Nix’s Pacemaker Placement: A First for Cornell

Nix’s regular veterinarian, Dr. Joan Ayers of Genesee Valley Veterinary Hospital, met with the Lockwoods and Dr. Barbara Delvescovo, clinical fellow in the Section of Large Animal Medicine at Cornell University, to discuss her potentially fatal heart condition and the need for a pacemaker.

“It was either do nothing and Nix would continue to get worse and possibly have a painful death — or the pacemaker,” said Mindy Lockwood.

Implanting a pacemaker in a miniature donkey is a complicated procedure, and it would be the first of its kind in a large animal species at Cornell. But thanks to the collaboration and teamwork between Mitchell and Delvescovo from the large animal internal medicine service, Dr. Lawrence Santistevan of the cardiology service, members of the large animal soft tissue surgery service, the anesthesia service, and multiple hospital staff members, the surgery went well.

On the Road to Recovery

Immediately after her surgery, Nix showed significant improvement. With proper blood flow to her brain, she was able to walk normally, without lethargy or fainting spells. In the short-term, she’ll need to stay calm and have limited exercise, because if the pacemaker lead pulls out of the heart muscle or becomes infected, it would be hazardous to the little donkey’s health.

“We will keep her calm for the first month to lower these risks, and if everything looks OK, then we will increase the pacemaker’s rate a little bit so she can get up some speed and play with her mum in the paddock,” Mitchell said.

Once home, Nix was put in a small pasture with her mother to keep her activity low while she continues to heal. According to Lockwood, “She has been much more alert, she’s vocal and has her spunk back.”

At a recent recheck appointment, the pacemaker was working well, and Nix’s heart had only a mild reaction to the device’s lead. However, she ended up staying in the hospital a few extra days to receive treatment for skin issues her care team assumed were due to biting flies.

If the device continues to work well, Nix will live a normal life. She’ll need to return to Cornell each year for rechecks, and the battery in the pacemaker will require replacement in about seven to nine years.

Mitchell recommends that any signs of weakness, lethargy, exercise intolerance or collapse in ponies, horses and donkeys be investigated immediately. "There are some very treatable conditions that can be diagnosed and the appropriate therapy recommended," she said.

Sources and References

¹ [Cornell Chronicle, August 11, 2022](#)
