

IRAP may be one more treatment in the arsenal against osteoarthritis.



IRAP

A complementary procedure that might help arthritis.

By Holly Clanahan

WYOUR GRADE 1 SPEED DEMON HAD BEEN SETTING THE WORLD on fire, but as time took its toll, his double-burners lost some of their fuel. Osteoarthritis was to blame.

Joint injections worked well, for a while. Then your veterinarian suggested something called IRAP. If you're unfamiliar with it, the acronym stands for interleukin-1 receptor antagonist protein, and it's a promising anti-arthritic protein that can be administered through gene therapy. Here's how it works:

Osteoarthritis – marked by damaged cartilage surrounding a joint – causes pain and inflammation. Interleukin-1 is a chemical normally secreted by cells as part of the inflammatory response, but it can accelerate the deterioration of joint cartilage.

IRAP binds to interleukin-1 and prevents it from binding to – and attacking – other tissues.

“By blocking this interaction, we hopefully can decrease pain and inflammation in the joint, creating an environment more conducive to healing and function,” said Brent A. Hague, D.V.M., Diplomate ACVS, ABVP.

“The response to treatment is variable and largely depends on the degree of degenerative joint disease (osteoarthritis) present at the time of therapy. Joints with primarily synovitis (inflammation of the synovial lining) or mild DJD respond the best,” said Hague, who practices out of Oakridge Equine Hospital at Edmond, Oklahoma.

David Frisbie, D.V.M., Ph.D., Diplomate ACVS, is an associate professor and researcher at Colorado State University who has researched the procedure. He recommends it for horses whose joint problems have been treated with intra-articular injections of corticosteroids but have either become unresponsive or never were responsive. He sees other practitioners who use IRAP as a first line of defense, and said, “I don't have any problem with that. If people want to spend the money for that, more power to them.”

An IRAP procedure might cost \$1,200-\$1,500, Frisbie estimated, and he prefers to treat a horse with corticosteroid injections first, before moving to the more expensive IRAP, which he said isn't necessary for every case of arthritis.

“We know that all arthritis isn't the same, and some cases don't respond to steroids,” he said. “That's a clear indication that we need to use something else.”

If IRAP is deemed necessary for your horse, here's what will happen:

First, some of your horse's blood is drawn into a syringe that contains etched glass beads. The beads, Hague said, stimulate production of the antagonist protein.

Next, the blood is incubated at 37 degrees C for 18-24 hours, and then the syringes are centrifuged to separate out

the serum, which is rich in IRAP, Hague said. The serum is filtered, then injected into the affected joint, typically once a week for three weeks.

“It is a natural anti-inflammatory agent,” Frisbie said. He has seen no ill effects from the procedure, aside from the risks involved any time a joint capsule is pierced with a needle. IRAP has been used in humans, especially to treat back pain, he said.

Frisbie said that although IRAP has become shorthand for the soup created from the incubated blood, there might be other factors at play besides the interleukin-1 receptor antagonist protein, and research in this area is ongoing.

“There's definitely an increase in IRAP,” Frisbie said, “but we don't know if there are other good things that go up even more; we don't know if there are other bad things that go up more.”

Considerable research has been done by Dr. Thomas Weinberger, a German veterinarian whom Frisbie said is a pioneer in the field.

On the Web site of Arthrex Vet Systems (a distributor of the special syringes), Weinberger said IRAP “stopped the progression of joint disease in horses,” and he detailed a study that showed promising results.

Included in the study were 10 German warmbloods with chronic lameness of the coffin joint. In the past, these horses had all been given joint injections of hyaluronic acid and/or corticosteroids. Other treatments included rest, orthopedic shoeing, controlled exercise and non-steroidal anti-inflammatory drugs (NSAIDs).

The horses were all tested with an anesthesia of the coffin joint to ensure that was where their problems originated. They received three IRAP therapies, every 10 to 14 days.

Fifty-five days after the first injection, seven horses showed no lameness at all with five to 10 minutes of trotting. Two horses showed a Grade 1 lameness, which means that the lameness was difficult to observe and not consistently apparent, regardless of circumstances. One horse showed a Grade 2 lameness, which means that its lameness was apparent only under certain circumstances (such as going on hard ground or while circling). This horse had begun the study with a much more severe lameness – one that was obvious at the walk – and had been lame for 48 weeks.

As was done in this study, Frisbie said it is crucial to properly diagnose the lameness – so the attending veterinarian will know which joint to treat.

In some instances – such as stifle joints that have soft-tissue problems, in addition to osteoarthritis – Frisbie opts for stem-cell therapy. See the February 2006 issue of *The American Quarter Horse Racing Journal* for more on stem cells.