Leeches, maggots make comeback in Ind. hospitals

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INDIANAPOLIS (AP) — Leeches and maggots are making a medical comeback.

Often described with the more elegant term "biotherapy," leeches and maggots can play a critical role in curing wounds by doing what they do naturally -- sucking blood or nibbling at dead flesh.

Historically leeches were used for bloodletting, under the theory that the loss of some blood would benefit a person's health.

Some alternative practitioners still offer bloodletting for overall wellness, but leeches have been experiencing a comeback in more traditional settings.

They got a big boost in 2004, when the Food and Drug Administration approved medicinal leeches and maggots, and the use of both continues to grow, said Dr. Ron Sherman, director of the Biotherapeutics Education and Research Foundation, a nonprofit based in Irvine, Calif.

"I don't believe that they have seen their full use nor do I see us anywhere near the plateau for the clinical utilities of maggots or leeches," Sherman told The Indianapolis Star for a Sunday story (http://indy.st/SKRouS).

Exact numbers are hard to come by because the labs that produce leeches and maggots do not publicize their sales data. However, Sherman said, in 1990, only one lab marketed medical-grade maggots. Today there are about two dozen worldwide.

Leeches don't make appearances every day on the hospital wards.

IU Health University Hospital keeps a supply on hand in a plastic bucket on a special shelf in a refrigerator in its basement pharmacy. Some times, a few months pass between doctors' prescriptions for leeches, said Scott Campbell, a pharmacy employee. Other times, he'll pull out the leech bucket several times in a single month.

That's because leeches, which have an enzyme that keeps blood from clotting, can be an ideal tool for helping to reattach an ear or finger, for example.

In these cases, blood may flow to the reattached area but not drain away. When this occurs, something has to be done to bring fresh blood to the area.

Enter the leech, an expert at blood.

"They can pull a lot of blood out," says Lee Ann Blue, chief nursing officer of Wishard Health Services, where leeches are used three or four times a year. "I have seen it used, and I thought it was a really fantastic therapy. At first, it was a little gross, but when you see what it does. ... It's very simple and it's unique."

Until Dr. Dion Chavis, a plastic surgeon at IU Health Methodist Hospital, started surgical training, he only thought of leeches as fish bait. Then, he learned leeches can assist with reattachments or lower extremity injuries in which skin grafts don't adhere well to the bone.

In one case, a patient almost lost the top half of his ear in a truck accident. Chavis repaired it, but the ear turned a little blue, suggesting that blood flow to the area had slowed. Chavis ordered up some leeches, and the man's ear healed.

Usually it takes four to five days of applying the leeches for about an hour a day for the therapy to be effective. Patients say it doesn't hurt.

IU Health orders from Leeches USA, a Westbury, N.Y., supplier that sells "quite a few thousand" leeches each year, according to Rudy Rosenberg, the company's vice president.

There are more than 650 types of leeches -- including some in the Amazon that can grow up to two feet long -- and many prefer to feed on mollusks or fish. The Hirudo Medicinalis leech, which is regulated by the Food and Drug Administration, makes its home in European bogs and proves to be just right for use in humans, Rosenberg said.

"It must have the right feeding system at the skin and not go deep into your system," he said.

This species of leech can live for up to three years without being fed. Typically leeches used medicinally haven't been fed for at least five months before they meet the patient, Rosenberg said.

Once a leech has had a single meal, the nurse must throw it away. Even if hospitals were to store the leech for another half a year until it was hungry again, they could not reuse it because of infection concerns.

Not every leech turns out to be an avid feeder.

"They're kind of divas. When they're ready to go, they go," Chavis said. "When they don't, you have to coax them. Sometimes they're not into it. Then they do an undulating motion and you know that they're right for the job."

No matter how hungry, leeches are not always the right critter for a job. With some wounds, the problem is not blood flow but dead, bacteria-ridden tissue.

Bring on the maggots.

During the Civil War, surgeons wrote about using these not-yet-flies to help clean wounds. After the development of antibiotics, people turned to drugs instead of bugs. But the recent rise of multi-drug resistant bacteria has brought maggots back.

Maggots feast on dead tissue while leaving live tissue alone, said Matt Hygema, a certified wound therapist and physical therapist with IU Health Methodist. Basically the maggots, baby green blow flies, sweat enzymes into the wound and liquefy the dead tissue, while secreting antibiotics into the area.

"They're definitely a niche treatment," said Hygema, who has used them on about eight patients over two years. "The wound heals itself. We're just trying to remove the barriers in the way, and one of the barriers is dead tissue and bacteria. Maggots are the best tool that I have ever used for getting a wound cleaned and disinfected."

Other options include having a wound therapist or surgeon clean the wound, but both of those can take longer and sacrifice more healthy live tissue, Hygema said.

Maggots are not for use everywhere. Because they remain on the wound for a few days, Hygema only uses them when he can put a good seal over the dressing to make sure they stay put. They typically work best for wounds on arms or legs. And he won't use them on abdominal wounds. "I wouldn't want to risk losing one in there," he said.

When first applied, maggots are hard to see. Protocol calls for about 20 per square centimeter; a wound the size of an iPhone would require about 400 maggots, Hygema said.

A few days later, when they have done the trick and Hygema wipes them out of the wound, they will have grown to the size of a grain of rice.

Skin crawling yet? Odds are you're not alone.

Disgust is a common human emotion, found across all cultures, says Daniel Kelly, an associate professor of philosophy at Purdue and author of the 2011 book "Yuck! The Nature and Moral Significance of Disgust." Most cultures share a characteristic facial expression for disgust, the pursed lips and sucked-in neck.

Humans likely evolved disgust as a mode of protection, to keep people from eating poisonous food or becoming infected with disease, Kelly says.

"You can't directly perceive microbes so disgust has become sensitive to the sort of things that might carry microbes ... like insects and

viscous slimy sort of things," Kelly said. "Another thing that disgust is sensitive to is bodily boundaries, because that's how you get infected."

Put those things together -- invisible microbes, slimy things and invasion of bodily boundaries and you've got leeches and maggots.

But the "yuck" factor is only one thing that stands in the way of broader use of these biotherapies, Sherman said.

Lack of education about why they're being used can certainly contribute. So can the low-tech nature of this treatment. It's hard to imagine that a hospital performing the latest in robotics surgery would also offer this decidedly non-glitzy therapy, Sherman said.

Many hospitals "have not yet overcome the worries that people will think poorly of them if they're using an old therapy," he said.

One of the most challenging aspects of maggot therapy, Hygema said, is educating squeamish nurses about why it works. Patients tend to be more accepting.

Similarly, Blue said, patients do not turn down leeches.

"I have never had any one refuse," she said. "People want to make sure they keep their fingers or toes."

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