

Erectile dysfunction drug relieves nerve damage in diabetic mice

March 17 2015

New animal studies at Henry Ford Hospital found that sildenafil, a drug commonly used to treat erectile dysfunction, may be effective in relieving painful and potentially life-threatening nerve damage in men with long-term diabetes.

The research targeted diabetic [peripheral neuropathy](#), the most common complication of diabetes, affecting as many as 70 percent of patients.

The study was recently published online in *PLOS ONE*.

Lei Wang, M.D., the Henry Ford neuroscientist who led the research, said that although numerous drugs have been shown to be effective in earlier animal experiments, most have not provided benefits in clinical trials.

"Generally, young diabetic animals with an early stage of peripheral neuropathy are used to investigate various drug treatments," Dr. Wang explains. "But patients with diabetes who are enrolled in clinical trials often are older and have advanced peripheral neuropathy.

"Failure to develop and properly evaluate treatments in the laboratory that properly reflect the target clinical population with diabetic peripheral neuropathy may contribute to the failure of clinical trials."

To mimic [clinical trials](#) in which diabetes patients have advanced peripheral neuropathy, the Henry Ford researchers chose male mice with

type II diabetes that were 36 weeks old, roughly equivalent to middle age in humans.

Earlier animal experiments from the Henry Ford group showed that sildenafil, commonly known by the brand name Viagra, improved blood supply to the sciatic nerve.

In addition, it was noted that diabetes patients who took Viagra for [erectile dysfunction](#) had fewer symptoms of peripheral neuropathy.

However, it was not known if this therapeutic effect held true for long-term peripheral neuropathy because the diabetic mice used in the previous experiments were relatively young - 16 weeks old.

So the Henry Ford researchers chose diabetic mice that were more than twice as old. In one group, 15 such mice were treated with an oral dose of sildenafil/Viagra every day for eight weeks. A control group of 15 age-matched diabetic mice were treated daily with the same amount of saline.

After a battery of nerve and function tests were performed on both the drug-treated and control groups, results "revealed that sildenafil markedly improved sensory function starting at six weeks after treatment compared with saline-treated [diabetic mice](#)," Dr. Wang says.

"These data indicate that sildenafil improves neurological function even in middle-aged mice with long-term diabetic peripheral neuropathy."

While stressing that the findings remain experimental, Dr. Wang says they provide new insights into the underlying mechanisms of long-term diabetic nerve damage and may lead to the development of a sildenafil treatment for long-term [diabetic peripheral neuropathy](#).

Diabetic peripheral neuropathy is particularly insidious because, as it progresses and damages nerves in extremities and other parts of the body, many patients are unaware of it because pain sensors are numbed.

As a result, a cut or sore on the bottom of a foot, for instance, may not be noticed until an infection sets in and spreads, possibly leading to amputation or even death.

Because diabetic neuropathy results from chronically high blood sugar levels, [diabetes patients](#) are strongly encouraged to closely monitor those levels and control them through diet.

Over-the-counter and prescription drugs - including antidepressants and opiates - are available to treat neuropathy pain, but often have undesirable side effects.

More information: journals.plos.org/plosone/article?id=10.1371/journal.pone.0118134

Provided by Henry Ford Health System

Citation: Erectile dysfunction drug relieves nerve damage in diabetic mice (2015, March 17)
retrieved 26 April 2024 from
<https://medicalxpress.com/news/2015-03-erectile-dysfunction-drug-relieves-nerve.html>

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