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Small Doses

Transmitters ensure surgical tools aren't left inside patient



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It's one of those little medical mistakes that can have deadly consequences: A surgeon accidentally leaves a bloody sponge or some other operating instrument inside a patient.

In some cases, the lost object doesn't cause any problems. But other patients aren't so lucky. A sponge can lead to a serious infection, obstruction of the intestines, or even death.

Now, researchers at Stanford University School of Medicine in California have tested a new electronic scanning system that could make this type of medical error a thing of the past.

A small electronic transmitter is clipped onto each sponge. A hand-held receiver can then be waved over the patient to make sure there are no sponges hidden inside the body before the incision is closed.

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The researchers used this technique in a series of operations and found it was "100 per cent" effective in pinpointing all the sponges, according to their study published in the journal Archives of Surgery.

In many respects, the technology resembles the scanners used to stop shoplifters from walking out of stores with stolen merchandise. But it's far more sophisticated, said Alex Macario, who led the research team.

Even so, this approach has limitations. The electronic transmitter used in the study "is the size of a nickel," Dr. Macario said. That means it's too big to be attached to small medical instruments. So the technology, developed by ClearCount Medical Solutions Inc., needs some refining.

"In the future, I believe all surgical items and supplies will be tracked in real time in the operating room, even as the sponges and metal instruments enter and leave the patient's body during surgery," he said in an e-mail interview. And that could be a lot safer than the most common method currently used to keep track of surgical equipment -- manually counting what goes in and out of the patient.

Light on an eye mystery

For years, doctors have wondered how the cornea, "the clear window of the eye," remains free of blood vessels. Aside from cartilage, the cornea is one of only a few parts of the body that can literally repel the intrusive growth of blood vessels. (The cornea needs to be free of obstructions, including blood vessels, to make vision possible.)

Scientists at Harvard Medical School believe they have solved the riddle. The lead researcher, Reza Dana, said the surface of the cornea is coated in protein receptors, called VEGFR-3, which have the unique ability to halt the spread of blood vessels. (The receptor binds to, and neutralizes, proteins that stimulate new blood vessels to grow.)

The discovery could help in the treatment of certain eye diseases, according to the study published in the Proceedings of the National Academy of Sciences.

Equally important, VEGFR-3 might also be useful in the fight against cancer. Dr. Dana noted that tumours need lots of nutrients for their unrelenting expansion. They gain access to these vital supplies by triggering the growth of new blood vessels, a process known as angiogenesis.

Dr. Dana said scientists might be able to "devise methods of overexpressing [VEGFR-3] in tissue surrounding a tumour," thereby starving it of new blood. If the approach works, a tumour could be halted in its tracks.

Migraine's added woes

It's bad enough to be plagued by migraines. But a new study suggests that some migraine sufferers are also at greater risk of developing heart disease.

In particular, women who experience an "aura" -- such as flashing lights or loss of vision -- immediately before a migraine attack are twice as likely to develop early heart disease, compared with the general population. The new findings, published in the Journal of the American Medical Association, are based on a 10-year study of almost 28,000 American women over the age of 45.

However, the study must be kept in perspective, cautions the lead researcher, Tobias Kurth of Brigham and Women's Hospital in Boston.

"I don't think our study should scare migraine patients. For most of the migraine patients -- those without aura -- our study indicated no increase in risk," Dr. Kurth explained.

He said the actual number of aura-related heart disease cases is low. "If you took a group of 10,000 women, you would expect to see 18 major cardiovascular cases per year that are due to migraine with aura."

He emphasized that other factors -- such as smoking, high blood pressure and elevated cholesterol levels -- pose a far greater threat for heart disease.

Dr. Kurth is reluctant to say whether the latest findings also apply to men because migraines affected the sexes differently. About 18 per cent of women have experienced migraine headaches, while only 6 per cent of men get them.

Diabetes and Alzheimer's

A small but tantalizing body of medical research suggests there could be a direct link between diabetes and Alzheimer's disease.

A few scientists are beginning to speculate that changes in the way the brain processes sugar could play a role in some cases Alzheimer's, similar to the way Type 2 diabetics have difficulty processing sugar.

At a recent medical conference in Madrid, U.S. researchers presented studies suggesting that diabetes-related drugs might also help people with Alzheimer's. The studies are very preliminary, but certainly worth watching.

However, this promising research has a dark side. The obesity epidemic is driving up rates of Type 2 diabetes around the world. If diabetes does help spur the development of Alzheimer's, then we can also expect an alarming rise in people with this mind-destroying disorder.

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