



Acupuncture's painkilling secret revealed

Twisting a fine needle into an acupressure point damages cells and triggers the release of an anti-inflammatory chemical that is then picked up by receptors on nearby nerves, which react by damping down pain

BY IAN SAMPLE
THE GUARDIAN, LONDON

Ever since Chinese doctors first poked their patients with sharp objects 4,000 years ago, and charged them for the pleasure, acupuncture has been shrouded in mystery.

Tradition has it that the procedure works by improving the flow of *qi* along invisible energy channels called meridians, but research published on Sunday points to a less mystical explanation for the painkilling claims of acupuncture.

The answer, according to a team of scientists in New York, follows an extraordinary study in which researchers gave regular acupuncture sessions to mice with sore paws.

After each half-hour session the mice felt less discomfort in their paws because the needles triggered the release of a natural painkiller, the researchers say. The needles caused tissue damage that stimulated cells to produce adenosine, an anti-inflammatory chemical, that was effective for up to an hour after the therapy was over.

Modern acupuncture involves inserting fine needles into the skin at specific points around the body. The needles are pushed in a few centimeters, and then heated, twisted or even electrified to produce their claimed medical effects.

Acupuncture has spread around the world since originating in China but conventional Western medicine has remained steadfastly skeptical. Although there is now good evidence that acupuncture can relieve pain, many of the other health benefits acupuncturists claim are on shakier ground.

NOT JUST A PLACEBO

The latest research gives doctors a sound explanation of how sticking needles into the skin can alleviate, rather than exacerbate, pain. The discovery will challenge the view, widely held among scientists, that any benefits a patient feels after acupuncture are due purely to the placebo effect.

"The view that acupuncture has little benefit beyond the placebo effect has really hampered research into the technique," said Maiken Nedergaard, a neuroscientist at the University of Rochester medical center in New York state, who led the study.

"Some people think any work in this area is junk research, but I think that's wrong. I was really surprised at the arrogance of some of my colleagues. We can benefit from what has been learned over many thousands of years," Nedergaard said.

"I believe we've found the main mechanism by which acupuncture relieves pain. Adenosine is a very potent anti-inflammatory compound and most chronic pain is caused by inflammation."

The scientists gave each mouse a sore paw by injecting it with an



Top: A patient lies on a bed as he undergoes acupuncture treatment at the Capital Medical University School of Clinical Traditional Chinese Medicine in Beijing.

Above: Figurines showing acupuncture points are on display at a pharmacy in Shanghai.

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inflammatory chemical. Half of the mice lacked a gene that is needed to make adenosine receptors, which are found on major nerves.

The therapy session involved inserting a fine needle into an acupuncture point in the knee above each mouse's sore foot. In keeping with traditional practice, the needles were rotated periodically throughout the half-hour session.

To measure how effective the acupuncture was, the researchers recorded how quickly each mouse pulled its sore paw away from a small bristly brush. The more pain the mice were in, the faster they pulled away.

Writing in the journal, *Nature Neuroscience*, Nedergaard's team describes how acupuncture reduced pain by two-thirds in normal mice, but had no effect on the discomfort of mice that lacked the adenosine receptor gene. Without adenosine receptors, the mice were unable to respond to the adenosine released when cells were damaged by acupuncture needles.

Acupuncture had no effect in either group of mice if the needles were not rotated, suggesting that the tissues had to be physically damaged to release adenosine.

Nedergaard said that twisting the needles seems to cause enough damage to make cells release the painkilling chemical. This is then picked up by adenosine receptors on nearby nerves, which react by damping down pain. Further tests on the mice revealed that levels of adenosine surged 24-fold in the

tissues around the acupuncture needles during and immediately after each session.

One of the longstanding mysteries surrounding acupuncture is why the technique only seems to alleviate pain if needles are inserted at specific points. Nedergaard believes that most of these acupuncture points are along major nerve tracks, and as such are parts of the body that have plenty of adenosine receptors.

'GROWING UNDERSTANDING'

In a final experiment, Nedergaard's team injected mice with a cancer drug that made it harder to remove adenosine from their tissues. The drug, called deoxycoformycin, boosted the effects of acupuncture dramatically, more than tripling how long the pain relief lasted.

"There is an attitude among some researchers that studying alternative medicine is unfashionable," said Nedergaard. "Because it has not been understood completely, many people have remained skeptical."

Although the study explains how acupuncture can alleviate pain, it sheds no light on the other health benefits that some practitioners believe the procedure can achieve.

Josephine Briggs, the director of the national center for complementary and alternative medicine at the US National Institutes of Health, said: "It's clear that acupuncture may activate a number of different mechanisms ... It's an interesting contribution to our growing understanding of the complex intervention which is acupuncture."

Travel broadened therapeutic uses of 19th century import

BY MATTHEW TAYLOR
THE GUARDIAN, LONDON

The first known British acupuncturist was John Churchill who, in 1821, published a series of results on the treatment of tympany [ear infections or deafness] and rheumatism with acupuncture.

Acupuncture has become increasingly popular since the early 1970s when travel restrictions between the East and West were eased.

It is hard to estimate the number of acupuncturists in Britain as the practice is unregulated. The British Acupuncture Council, the UK's largest body of professional acupuncturists, has about 3,000 members.

In the UK, the country's health service offers limited acupuncture and most patients pay for private treatment. Currently, official health bodies only recommend acupuncture as a treatment option for lower back pain.

Conclusive evidence of its effectiveness has proved hard to establish. Some studies suggested that acupuncture can slightly improve the chances of a woman become pregnant during IVF treatment. But others found it made no difference.

There have been similarly mixed results on the effects of acupuncture on arthritis. Two studies on osteoarthritis of the knee found that the procedure helped, but more recent research found there wasn't much difference between people having acupuncture or sham (placebo) acupuncture.

Trials on treatment for headaches took into account the placebo effect by comparing authentic acupuncture to a sham procedure. Overall traditional acupuncture produced slightly better results.



Above: Acupuncture needles are arranged on a tray at Beijing's Capital Medical University School of Clinical Traditional Chinese Medicine. Chinese medicine practitioners are offering their treatments as an alternative to vaccinations after a series of health product safety scandals in China over the past few years.

PHOTO: REUTERS

[SOCIETY]

Afghan camels do battle as proxy warriors

Banned as un-Islamic under the Taliban regime, camel fighting is once again a popular sport in northern Afghanistan

BY SARDAR AHMAD
AFP, MAZAR-I-SHARIF, AFGHANISTAN

Afghan warlords Ghawsudin and Sher Arab have been at war for most of their lives, sometimes fighting side by side as they did against the Soviets, other times fighting each other.

Now, almost nine years into a new era — a US-sponsored government challenged by a Taliban-led insurgency tearing their country apart — the two men are again at war, but this time they use proxies to fight their battles.

At sports festivals across Afghanistan's relatively peaceful north, Ghawsudin and Sher Arab are represented in the ring by giant Central Asian camels.

Banned as un-Islamic under the Taliban's radical 1996-2001 regime, camel fighting is a violent feature of daily life in Afghanistan, a country where the value of both men and animals is based on their fighting skills.

In the northern province of Balkh, Ghawsudin and Arab are well known, not only as veteran warriors but as owners of the best fighting camels in the land, and as masters of the game.

"We wait all year for this," said Khwaja Habib, a farmer from Balkh's Dawlat Abad district, ahead of a mighty clash between Luk and Nar, two enormous camels representing, respectively, Ghawsudin and Arab.

"They have the strongest camels, it's going to be a real game," Habib said, as more than a dozen men escorted the two camels onto a dirt field circled by thousands of spectators, almost all of them men.

The animals are positioned face-to-face and then, spitting with fury, ram each other in a battle that resembles a men's wrestling match.

The crowd roars its approval as one of the camels — it is Luk, Ghawsudin's beast — forces the other into submission by pressing down on his neck with his massive chest.

"He's going to kill him," shouts the referee in the muddy ring before ordering that the muzzled animals be separated ahead of a second round.

The men, with their long beards and turbans, roar their protest but the decision has been made by the losing camel, Nar, who has kicked himself up and is running out of the ring.

According to the rules of camel fighting, by turning tail the giant gray has conceded to Luk.

Laughter erupts, banknotes are exchanged as gamblers collect or pay on their bets and Ghawsudin accepts congratulations as a dozen of his men parade Luk in a lap of honor.

"Yes, we won," Ghawsudin said. "As usual."

"It's an old tradition that we have inherited from our ancestors," Ghawsudin, who uses only one name, said as his fans cheered his victory.

"We like it — especially when we win," he said, with a loud laugh.

Camel fighting has made a strong comeback as a spectator sport since the Taliban regime — which also banned music, kite flying and education for girls — was overthrown in a US-led invasion in late 2001.

Its popularity is mostly concentrated in the north, where the Taliban have had little influence, even when they were in power. As a result, the northern provinces have been largely shielded from Taliban excesses, though Kunduz and Baghlan have seen a rise in insurgency-related violence in recent years.

The relative peace of the north — especially in Mazar-i-Sharif, capital of Balkh — has allowed people to revive such traditions as *buzkashi*, a frantic, mounted polo-like sport using a headless goat carcass rather than a ball, and kite flying.

But making animals fight each other and betting on the outcome is a favorite pastime: Along with camel fighting, sports festivals often include ram fighting, dog fighting, even bird fighting.

The enthusiasm on show in the north stands in stark contrast to the south, where the insurgency is concentrated and where most ordinary people live in fear of both the militants and the NATO-backed forces fighting them.

Animal fights have been specifically targeted by militants in the southern provinces, making attendance a high-risk venture.

In February 2008, a Taliban suicide bomber killed 80 people at a dog fight in Kandahar. Most of the dead were farmers having a flutter.

But even in Mazar-i-Sharif, nothing is taken for granted.

"We have security. Without security you can't have fun," Ghawsudin said.

Negotiations begin for a second bout and a fresh pair of camels is escorted into the ring — again representing the former warlords.

But this time the fighting lasts hardly two minutes as Arab's camel pulls back after the first contact with Ghawsudin's spitting light-gray.

Mocking laughter from the crowd fills the air.

"It's his unlucky day," said one spectator, referring to Arab who has left without saying a word.



Spectators watch as camels fight on the outskirts of Mazar-i-Sharif in Afghanistan's Balkh province in March of last year.

PHOTO: AFP