

Genetic component to chronic back pain

July 2 2012, By Elin Fugelsnes and Else Lie



(Medical Xpress) -- Why do some people recover quickly from lower back pain while others suffer for much longer periods? Genetics may play a role.

It is estimated that 60 to 80 per cent of [Norway](#)'s population experience lower back pain at some point in life. No single condition costs society more in social insurance benefits.

“After a prolapsed disc, long-term lower back pain and sciatica are all-

too-familiar problems,” says Senior Researcher Johannes Gjerstad of the Norwegian National Institute of Occupational Health (STAMI). “For most people this means sick leave and greatly diminished quality of life.”

It has long been a mystery why some people develop long-term lower back pain after a prolapse and others do not. Now, findings from a research project headed by Dr. Gjerstad indicate that part of the explanation lies in our genes.

Differences over time

The project, which has received funding from the Research Council of Norway’s Programme on Clinical Research (KLINISKFORSKNING), involves nearly 300 patients with prolapsed discs at Oslo University Hospital and Haukeland University Hospital in Bergen.

Comparing these back patients with a healthy control group, the researchers initially discovered no [genetic](#) differences between the two groups.

“This surprised us,” says Line Melå Jacobsen, a doctoral research fellow involved in the project. “The findings did not match our supposition that some people are genetically predisposed to [lower back pain](#) and sciatica.”

Fortunately the research team did not give up there, because following up the patients for an entire year proved enlightening. It turned out that the back pain developed very differently from patient to patient: in two out of three prolapse cases, the patients healed completely, but the remaining third continued to suffer.

Build-up of pain inducers

Studying the patients' DNA, Melå Jacobsen found that they possessed different variants of a gene that can lead to the accumulation of pain-inducing substances, which in turn can make some people develop chronic pain more readily than others.

Although everyone basically has the same genes, there are many genes that come in multiple versions – an ordinary and a variant. Often this variation is caused when a single base-pair in the DNA code is substituted by another pair.

“The COMT Val158Met [gene variant](#) we've been studying reduces the activity of a key enzyme for breaking down substances that can induce pain,” explains Melå Jacobsen. “Patients with this gene variant had more long-term pain and poorer functionality than [patients](#) without that variant.”

Knowledge such as this will ultimately help researchers to customise prevention and treatment better.

Environmental factors significant

The researchers stress that although our genes may be a contributing factor, they do not fully account for why some people develop chronic back pain and others do not.

“What we have found is a low-impact gene variant,” points out Dr. Gjerstad, “meaning that it does not in itself lead to chronic pain. So people with an ‘unlucky’ gene variant are not necessarily fated to suffer.” Other factors also play a role, he adds, including physical and psychosocial workload.

“In a way it is good to know that the work environment also plays a part, because we can alter that. And since we know that some people are more

prone to back [pain](#) than others,” concludes Dr. Gjerstad, “we need to take them into consideration and try to make sure that as few as possible become affected.”

Provided by The Research Council of Norway

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