PRACTICAL TIPS:  Managing psychotropics in the peri-operative period

GENETIC ROOTS:  Missing gene in lab mice may identify link between brain development and behaviour

IS A PEDOPHILE BORN OR MADE?
James Cantor is using cutting edge MRI technologies to find the answer.

NAÎT-ON PÉDOPHILE OU LE DEVIENT-ON ?
James Cantor cherche la réponse en utilisant les technologies de l’IRM to find the answer.

PHOTO: Grant Martin
MRIs link pedophilia to early brain development

by Jadranka Basic

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The results surprised me and my entire team," says Dr. Cantor. There were two schools of thought on where the differences in the brain would be located, he explains. Some researchers believed the differences would be found in the frontal lobe; the emotional control centre of the brain housing impulse control. Others believed distinctions would be found deep in the limbic system of the temporal lobe; the area of the brain that controls sexual behaviour and urges.

"We kept re-running the analyses because we had trouble believing our own results," says Dr. Cantor. "It turned out that the differences weren't in either the frontal or temporal lobes. Instead, we found variations existed in the white matter tissue that connects all regions of the brain. There was significantly less of it in the brains of male pedophiles."

The eureka moment came when Dr. Cantor glanced over at a paper evaluating which parts of the brain respond to sexual stimuli. It was sitting on his desk next to the pile of results from his own MRI study. It showed that the areas of the brain which light up in response to sexual stimuli were the same in both pedophiles and non-pedophiles. Even more important was that these areas were the ones where variations were found in the connective white matter.

Pedophilia, according to Dr. Cantor, appears to be just one of a constellation of characteristics which point to a problem with the development of the brain in the womb, such as being left-handed, having a low IQ and being shorter in stature than the average male.

His next step was to look more directly at the brains of pedophiles versus those of non-sexual offenders with the help of magnetic resonance imaging (MRI) technologies. A total of 127 men participated in this follow-up study.

"It seems the brain doesn't have a sex centre, but instead the brain has a network that together serves to identify in the environment what stimuli are potentially sexual stimuli," explains Dr. Cantor. "The research seems to suggest that there is a problem in the wiring of the brain of a pedophile. There is something wrong with the way that circuitry connects the sexually responsive parts of the brain."

In 2008, Dr. Cantor has received a $1 million operating grant to expand a research program from the Canadian Institutes for Health Research (CIHR). His team will be repeating the MRI scans from his previous study, but will also be using two newer MRI technologies: diffusion tensor imaging (DTI) and magnetization transfer.

These two cutting edge MRI technologies will give more specialized and focused information about white matter that Dr. Cantor says isn't captured by the regular MRI.

"My greatest hope for this line of research is to give us an idea of how and when to engage in the primary prevention of pedophilia," says Dr. Cantor. "If we can figure out why someone has a sexual attraction to children, we can figure out a way to remove the motivation a person may have to commit a sexual offense against a child."

While Dr. Cantor's research suggests early brain development may be the key to what makes a person a pedophile, it is too early in the research to pinpoint when before birth or what before birth caused the neurological variance.

"It could be something as simple as poor prenatal nutrition, or some toxin in the environment, or the mother may have been exposed to some sort of virus that interferes with normal and optimal fetal growth in the womb," says Dr. Cantor. "It's too early to rule anything out, but it seems there is something in the wiring of the brain that causes the behaviour, along with the development of certain physical and intellectual characteristics like being left-handed and having a low IQ."

Dr. Cantor is quick to point out that there is nothing in his research to suggest there is a magic pill or therapy that will turn a pedophile into a non-pedophile, but it does underscore the types of treatments that are probably most effective are those that involve medications to dial down the sex drive and counseling techniques to teach pedophiles to manage their sexual interests and exercise self-control.

"The MRI scans suggest early brain development may be the key to what makes a person a pedophile, but despite the biological link, there is nothing in this research to suggest that pedophiles are not responsible for their actions," says Dr. Cantor. "I think the strongest implications of these findings is that we need to do everything we can to help people control their own behaviours."

Canadian Psychiatry Aujourd'hui, June 2009 Juin 7