



Research Update

The chlamydial cause of heart disease

Chlamydia infections cause the immune system to attack the heart, leading to inflammation in the heart and cardiovascular changes, experiments conducted at the University of Toronto indicate (*Science* 1999;283:1335-9).

"This is the first research to show that this is a causal relation," says principal author Dr. Josef Penninger. Previous research has found an epidemiological link between *Chlamydia pneumoniae* infection and heart disease. As well, a study by Toronto researcher Bill Fong that was reported in this column has shown that injecting rabbits with the bacteria leads to atherosclerosis.

What Penninger and his colleagues have discovered is the actual mechanism by which infection causes heart damage. The key is a peptide in a protein found only in the heart muscle. This protein has recently been purified, and injecting it into mice has been found to cause swift and dramatic damage to the heart. Further research isolated the peptide responsible from this protein. Penninger's team hypothesized that a pathogen was causing the body's immune system to attack this peptide through a process called "molecular mimicry," in which the body mistakes a peptide in its own tissues for an invading pathogen. Originally, they were studying coxsackieviruses, which are the most common cause of my-

ocarditis in children. However, when they conducted a computerized search for the peptide in known viruses and bacteria, they found 1 match: the 3 species of *Chlamydia* bacteria.

"When there is a *Chlamydia* infection, T cells start attacking *Chlamydia*. The cells 'see' the pieces on the outside of the *Chlamydia* and attack them. These cells are circulating in the body. They see something in the heart that they mistake for *Chlamydia* — the *Chlamydia* protein looks very similar to the protein present in our heart."

Research into the link between *Chlamydia* and heart disease thus far has focused on one species, *Chlamydia pneumoniae*, a respiratory infection to which almost all people are exposed before reaching adulthood. However, this study shows that *Chlamydia trachomatis*, the most prevalent sexually transmitted disease, as well as *Chlamydia psittaci*, another respiratory pathogen, may also be implicated. Penninger points out that most of the previous epidemiological research correlating antibodies to *Chlamydia* with heart disease could not distinguish among the 3 species of *Chlamydia*.

It is unclear what proportion of heart disease is linked to *Chlamydia* infection. American researchers have said that because heart disease is such a common killer, even a 2% reduction

in the numbers of cases would be a significant achievement. Penninger also cites the statistic that 20% to 50% of people with heart disease have none of the traditional risk factors. This could be an indication of the proportion affected by *Chlamydia* infection.

Penninger believes that clinical ramifications of this research are not far off. "This research could lead to a vaccine or screening for people at high risk." — C.J. Brown

Research news . . .

No evidence that fat increases risk of breast cancer

A huge cohort study that followed more than 88 000 women for 14 years has found no link between eating fat and the risk of breast cancer (*JAMA* 1999;281:914-20). The data were taken from the Nurses' Health Study begun in 1976. Participants filled out a questionnaire on their eating habits every few years. Analysis of overall fat intake, and intake of different types of fat (animal, vegetable, saturated, polyunsaturated, trans-unsaturated), showed no difference in risk between those who ate a high proportion of fat and those who ate little. These results fly in the face of current thinking that a high-fat diet is a risk factor for breast cancer.

MDs resign

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dispute. The report concluded that a lack of leadership at the board level meant that these differences with the professional staff were never resolved.

The rifts first appeared in November 1997 and were aggravated in June

1998 when the board abruptly fired Annemarie Allan, the program care coordinator. Her firing prompted a nonconfidence vote by the medical staff at the June board meeting, and resulted in the doctors' resignations. "The board made a conscious decision to interfere with the fulfilment of the program and severely disrupted the team process," the doctors stated

in their letter of resignation. "What I have learned is that if a physician goes into a situation like this," says Black, "the board must be accountable."

A new executive director is currently hiring staff, and 3 on-call physicians have been hired. The board has now divided itself into 2 groups: one to raise funds and the other to manage the hospice. — © Heather Kent