

Biomedicine

From Chicago at the annual meeting of the American Society for Microbiology

Nanobacteria strike the kidney again

Cystic fibrosis. Muscular dystrophy. Hemophilia. Down's syndrome. Sickle cell anemia. Most people have heard of these illnesses, each caused by a genetic mutation. They may not be as familiar with polycystic kidney disease (PKD), even though it affects more individuals than all those other conditions combined and is the most common lethal genetic disease in the United States (SN: 5/27/95, p. 330). In PKD, large cysts form within the kidney and disrupt the organ's function.

While scientists had already identified flawed genes at the heart of most cases of PKD, a research group now suggests that odd microbes, known as nanobacteria, play an equally important role in the disease's progression. Last year, Finnish investigators argued that many kidney stones result from unusually small bacteria that form calcium-rich shells around themselves (SN: 8/1/98, p. 75). These nanobacteria seem to live within kidneys or in the urine that the organs produce.

For the past decade, Marcia Miller-Hjelle of the University of Illinois College of Medicine at Peoria and her colleagues have investigated whether an infectious agent plays a role in PKD. Several clues motivated the hunt. First, the onset of PKD varies among people with identical gene mutations. While PKD can destroy kidneys in childhood, some people suffer no problems until decades later.

Second, when examining fluid within the cysts, the researchers found an immune-stimulating bacterial substance called endotoxin, which indicates that PKD kidneys were infected. Finally, studies have shown that mice with a form of PKD will survive longer if kept in a germfree environment.

Despite all this evidence, Miller-Hjelle and her colleagues were unable to isolate and cultivate any infectious microbe from the kidneys or cyst fluids of people with PKD. Then, they learned of nanobacteria, which don't grow in traditional culture media. Working with the Finnish scientists who discovered the microbes, the researchers found signs of nanobacteria in most people with PKD. For example, they cultured the microbes from 10 of 12 kidneys from PKD patients. Microscopy revealed nanobacteria in each of seven PKD kidneys, and cyst fluids contained proteins specific to nanobacteria.

While not dismissing the importance of gene mutations, the investigators speculate that nanobacteria and their endotoxin cause much of PKD's harm. The gene mutations may create kidneys that are especially vulnerable to damage, perhaps because the organs can't repair themselves easily.

"It's a combination of environment and genetics," suggests Illinois' J. Thomas Hjelle. The researchers now plan to grow PKD-prone mice in germfree conditions and infect them with nanobacteria.

"It's certainly feasible that the presence of an infectious microbe can accelerate or exacerbate the disease process," comments PKD investigator James P. Calvet of the University of Kansas Medical Center in Kansas City. Yet, there's strong evidence that many PKD cysts form extremely early in life, even during fetal development, he notes. Such cysts are difficult to explain as the result of an infection, says Calvet. —J.T.

The explosive downside to zapping bugs

The snap, crackle, and pop of bug zappers has become a familiar sound in backyards around the country. With a light that attracts insects to an electrified grid, the devices seem an effective, if slightly sadistic, way to eliminate pesky bugs.

Leave it to scientists to try to ruin summer's fun. Zapped bugs spray bacteria and viruses up to 6 feet, James E. Urban of Kansas State University in Manhattan and his colleagues now report. Just in case the shower of microbes poses a health risk, Urban suggests moving the bug zapper away from the grill and picnic table. *Bon appétit.* —J.T.

Behavior

From Denver at the annual meeting of the American Psychological Society

Forgot to remember to forget

Memory researcher Jonathan W. Schooler noticed a curious phenomenon as he investigated the cases of seven adults who reported recovered memories of being sexually abused as kids.

After finding corroborating evidence for each of the alleged sexual assaults, the University of Pittsburgh scientist came across a peculiar memory realignment in two women. He discovered that each had talked to her former husband about having experienced childhood abuse but did not recall having done so when, years later, emotion-laden memories of the events suddenly surfaced.

In all seven cases, the intense recollections of past abuse arose in response to an unexpected memory cue—such as a friend mentioning child molestation, Schooler says. The emotional crush of these insights unleashed vivid memories, which participants then incorporated into coherent accounts of the events.

At the same time, these wrenching discoveries led the two women to assume that they could not previously have remembered such disturbing material in a purely factual way, Schooler contends. He notes that their former spouses said that the women had spoken to them of childhood abuse incidents in an unexpressive, matter-of-fact way.

Schooler calls this the "forgot-it-all-along" effect. It starkly illustrates how memories are reinterpreted in light of new knowledge. In fact, the Pittsburgh researcher refers to the sudden recall of past traumatic events as discovered, not recovered, memories. Some of these discoveries may not be authentic, in his view. Even genuine ones may eliminate a person's recognition of what was previously recalled about the event.

In several cases that Schooler investigated, victims said they had completely forgotten about sexual-abuse incidents hours or days after they had occurred. Such claims have ignited great controversy (SN: 9/18/93, p. 184). However, comparable memory wipeouts often occur when people forget emotionally disturbing dreams shortly after awakening, Schooler contends.

"I've created as many false memories [in laboratory experiments] as the next person," he says. "But it's possible to have an authentic discovered memory of childhood sexual abuse." —B.B.

Hooked on a feeling

Researchers have had difficulty finding evidence that the addictive pull of nicotine and other drugs derives in any way from the unpleasant physical reactions people have when they try to kick the habit. Many recovering addicts, for instance, succumb to temptation long after shedding such withdrawal symptoms as shaking and nausea.

However, withdrawal encompasses a range of potentially long-lived emotional responses in drug abusers that can usher them back into addiction, contends Timothy B. Baker of the University of Wisconsin-Madison. Many smokers trying to give up cigarettes encounter an initial spike in irritability, depression, and other negative emotions, Baker says.

These feelings then diminish for a week or two before intensifying again, culminating in a return to cigarette use about a month after having stopped smoking, Baker finds. Individuals who exhibit particularly intense mood drops in the first 5 days after giving up cigarettes usually throw in the towel within the next 2 weeks.

Baker and his colleagues compiled profiles of daily emotional and physical withdrawal symptoms over 2 months for 50 cigarette smokers using nicotine patches in an attempt to quit.

Ex-smokers often suffer from intermittent bouts of emotional withdrawal symptoms, Baker concludes. The welling up of these dark feelings may stem from extended mourning for the loss of pleasure, security, and other elements of an individual's smoking experience, he proposes. —B.B.