



## CARDIOLOGY

### Leukocytosis After ICD Implantation

Reports and studies have documented a marked rise in infections related to cardiac devices, mostly implantable cardioverter-defibrillators (ICDs). While ICD use rose by 160% between 1996 and 2003, for instance, the number of ICD-related infections jumped 6-fold, say researchers from University of Rochester Medical Center in Rochester, New York; Johns Hopkins Medical Institutions in Baltimore, Maryland; and Oregon Health and Science University in Portland, Oregon, who conducted a study to examine the prevalence and clinical significance of postimplantation leukocytosis.

The researchers note that it is common for a patient's white blood cell (WBC) count to spike within 48 hours of the implantation. They also point out that a systemic inflammatory response is often observed after open and minimally invasive surgery. Could the 2 phenomena be the same response?

The study reviewed medical records of procedure-related complications in 1,245 patients who underwent ICD or pacemaker implantation. During the 8-week follow-up period, 8 patients developed infections, a low infection rate (0.6%) consistent with other findings. Four patients died within 72 days.

The researchers found no correlation between postprocedural WBC count and risk for infection. None of the patients who had significant leukocytosis ( $\geq 50\%$  increase in WBC count) developed infections related to device implantation. Moreover, none of the patients who developed early infections after implantation

had significant leukocytosis; these patients were more likely to exhibit minimal change in WBC count, the researchers found.

The type of implanted device seemed to influence the change in WBC count. Patients with ICDs were more likely to develop significant leukocytosis than were those patients with pacemakers. This finding prompted further investigation into a possible association with defibrillation threshold (DFT) testing. However, DFT testing revealed that the number of shocks were not predictive of significant leukocytosis.

Their data suggest that significant leukocytosis after implantation likely represents a systemic inflammatory response similar to that seen after other surgical procedures, the researchers say, not a marker of impending acute infection.

Source: Tompkins C, Cheng A, Brinker JA, et al. *Am J Cardiol.* 2013;111(11):1608-1612.  
doi: 10.1016/j.amjcard.2013.01.334.

## DIFFERENTIAL DIAGNOSIS

### A Misleading Case of Herpes

An unusual presentation of herpes zoster had physicians puzzled at an urgent care clinic, according to a report from the Boston University School of Medicine in Massachusetts. Two days earlier, the patient, a 28-year-old man, had developed an erythematous, nonpruritic, non-tender rash on his upper-right chest, axilla, and upper back. On the night before admission, he had had severe bilateral eye pain with extraocular movement, photophobia, and mild headache. He had no fever, chills, vision changes, neck stiffness, or "bull's-eye" rash. His medical history was unremarkable, although the physicians noted that he worked on

cell phone towers with exposure to brush and bugs.

While in urgent care, the patient's temperature was measured at 100.5°F. He was taken to the emergency department and was afebrile on arrival. Lab tests showed a white blood cell count of 9.34 K/mm<sup>3</sup> with 68.9% neutrophils. A lumbar puncture revealed 127 nucleated cells (98% lymphocytes), < 1,000 red blood cells, protein 58.3 mg/dL, and glucose 57 mg/dL. An ophthalmologic examination found ophthalmoplegia and photophobia with no signs of optic neuritis or disc edema.

The patient was given ceftriaxone, vancomycin, and dexamethasone empirically for bacterial meningitis.

His skin findings prompted the physicians to add a varicella-zoster virus (VZV) polymerase chain reaction test to the cerebrospinal fluid sample; several of the skin vesicles were also unroofed, and the fluid was sent for viral culture. All samples came back positive for VZV. He completed a 14-day course of valacyclovir and recovered fully.

"Several experienced physicians" were thrown off course by the atypical eye pain, the patient's age, lack of classic "burning" paresthesias, and his job. They first focused on his possible exposure to ticks and Lyme disease; they also suspected acute bacterial meningitis.

Lesson learned: The authors advise being aware that patients with herpes zoster may easily develop signs of meningeal irritation because the virus replicates in nerve cells and accesses the cerebrospinal fluid, leading to various presentations, even in "young, seemingly healthy individuals."

Source: Wasserman MS, Rose AJ. *Am J Med.* 2013;126(6):e3-e4.  
doi: 10.1016/j.amjmed.2013.01.015.

## PATIENT SAFETY

### Calculating the Risks of *C difficile*

How health care professionals feel about their risk from certain pathogens can affect whether they adhere to infection control policies, and that can influence patient safety.

How does this relate to *Clostridium difficile*, a major cause of patient illness and death? To find out, researchers from University of Dundee in Scotland conducted the first structured review of the issue. They planned to study only *C difficile*, but found that research was so limited they expanded their review to methicillin-resistant *Staphylococcus aureus* (MRSA).

The researchers found only 4 studies that specifically covered *C difficile*, all of which found health care professionals had poor technical knowledge of *C difficile*, including knowledge of microbiologic aspects, risk factors, diagnosis, treatment, and prevention. One study also found that knowledge of risk factors was actually poorer among senior physicians and nursing staff than among trainees.

The current study highlights the “complexity and diversity” of health care professionals’ perceptions of risk, their responses to that risk, and how the perceptions and responses vary in different contexts, the researchers say. For instance, they found, although physicians and nurses may have had a good understanding of MRSA, they had a marked lack of technical understanding of *C difficile*. And despite that good understanding of MRSA, hand hygiene practices were poor before and after contact with patients. Further, even more of a worry, the researchers say, poor hygiene practice was seen as “normal practice,” even among nurses who viewed themselves as role models.

The reviewed studies also brought

up other paradoxical findings. Sometimes health care professionals and volunteers perceived MRSA as “very serious” and that they faced a high risk of infection; other times, nurses and doctors differed in their risk perception.

Consistent training may be one key to resolving the paradoxes in perception and practice, the researchers suggest.

Source: Burnett E, Kearney N, Johnston B, Corlett J, MacGillivray S. *Am J Infect Control*. 2013;41(5):394-400. doi: 10.1016/j.ajic.2012.12.013.

## WEIGHT CONTROL

### Keeping Weight Off: A Losing Battle?

For many people, losing weight can be hard and oftentimes disheartening when they aren’t able to keep off the weight. But that’s the reality for many people: Studies have shown that it’s not uncommon for patients to regain a large amount of the weight they’ve lost, say researchers from University of Ottawa and Children’s Hospital of Eastern Ontario Research Institute, both in Ottawa; and Laval University in Quebec City, all in Canada. One study they cite found that 70% of those who were overweight or obese regained all or even more pounds from the time they started their weight loss programs.

In part, the ongoing struggle has to do with a mismatch between caloric intake and physical activity. Not everyone can easily achieve the ideal energy balance; however, the authors note that it isn’t even as easy as energy in/energy out but is rather a function of the “complex interplay among metabolic tissues, hormones, and brain reward systems.” For instance, the hormone leptin plays a role in regulating energy expenditure; higher leptin concentrations have been shown to predict weight relapse.

In addition, the neurotransmitter dopamine has been implicated in mediating the “rewarding value” of food.

The researchers, who reviewed weight loss literature, conclude that body weight loss seems to “orchestrate a coordinated response to resist further energy depletion.” Losing weight seems to produce several changes in circulating concentrations of the gut-brain and metabolic hormones involved in maintaining energy balance.

Few studies, the researchers say, have examined the long-term hormonal changes after a diet-induced weight loss. Notably, one study revealed hormonal changes and significantly higher subjective appetite scores in response to a 10-week weight loss program for overweight and obese men and postmenopausal women. In that study, hormones remained significantly reduced 12 months after the initial weight loss, suggesting that compensatory changes in circulating mediators of appetite that promote weight regain after diet-induced weight loss persist.

The researchers also point out that the neurotransmitters and hormones that influence the pleasure food brings play a role in weight regain. For instance, short-term (8 weeks) caloric deprivation has been shown to produce a 10% increase in food “liking.” Another study showed that fasting for 24 hours heightens smell related to palatability. Such findings, the researchers say, suggest that increases in food reward, palatability, and appetite during periods of caloric restriction may increase the reinforcing value of food and thus caloric intake—and consequently prevent successful weight maintenance or further weight loss. ●

Source: Reed JL, Chaput J-P, Tremblay A, Doucet É. *Can J Diabetes*. 2013;37(2):121-127. doi: 10.1016/j.jcjd.2013.03.022.



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