Inflammation Poses a New Target in Diabetes

BY NANCY WALSH
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NEW YORK — The process of inflammation—increasingly seen as a central component in a wide variety of chronic diseases—may prove to be the link between type 2 diabetes and cardiovascular disease, according to Dr. Vivian Fonseca.

This holds potential implications for the treatment of diabetes, with an old therapeutic approach being revisited. "In 1876, a report appeared in the German literature describing improvement in glucosuria in a patient with diabetes using high doses of sodium salicylate," Dr. Fonseca said at a meeting sponsored by the American Diabetes Association.

It is now known that low-grade inflammation arises from adipose tissue, with adipocytes secreting many cytokines involved in the production of C-reactive protein, fibrinogen, and metalloproteinases, including tumor necrosis factor–α and interleukin-6 (IL-6).

"The master switch for inflammation is the [nuclear transcription factor] NF-B, which is normally present in the cytoplasm with [inhibitory protein] IB kinase," said Dr. Fonseca, professor of medicine and pharmacology, Tulane University, New Orleans.

"When this NF-B/IB axis receives a signal, whether from a virus or from an adipocyte-derived cytokine, NF-B moves into the nucleus, where it serves as a transcription factor for a wide variety of genes involved in the inflammatory process," he said.

Whether the use of anti-inflammatory agents to interrupt this NF-B axis may represent a new pharmacologic approach to the treatment of diabetes is now being evaluated in a multicenter study funded by the National Institutes of Health.

The agent being tested is salsalate, which is insoluble at acid pH and therefore does not cause stomach irritation. Salsalate also does not interfere with prostacyclin or cyclooxygenase-2, nor does it raise blood pressure, Dr. Fonseca said.

Preliminary studies with salsalate in a small number of patients have shown that, aside from suppressing inflammation, it also improves glucose utilization, increases insulin secretion, and increases energy expenditure.

Patients are now being recruited for the study; information is available at www.tinsal-t2d.org.

Dr. Fonseca disclosed that he receives research support from the American Diabetes Association, the National Institutes of Health, and a number of pharmaceutical companies. ■

Electronic Insulin Protocol Reduces Time, Cuts Errors

ORLANDO — The use of a computer protocol to achieve tight glycemic control dramatically lowered insulin administration errors, compared with a paper-based protocol, according to a study of simulated patients in an intensive care unit.

The computer format also improved satisfaction among ICU nurses, Dr. Anthony Y. Lee of Columbus Children's Hospital in Ohio said at the annual congress of the Society of Critical Care Medicine.

Dr. Lee and colleagues at the University of Maryland Medical Center, Baltimore, recruited 51 medical ICU nurses to complete seven simulated patient scenarios using both the standard paper-based insulin protocol and a computer version of the protocol. The scenarios included a clinical case description, a current insulin dose, and new and previous blood glucose level. The nurses were given standardized instructions on how to use both paper and computer versions of the protocol and were required to indicate the new insulin dose and the time of the next blood glucose check.

The simulated situations produced 357 paper responses and 357 computer responses showing a significant reduction in errors using the computer format. Use of the paper protocol resulted in 82 insulin-dosing errors, compared with 4 errors using the computer system. It seemed that the same study participant committed all four errors using the computer protocol.

Errors in the timing of the next blood glucose check fell from 47 with the paper-based protocol to 8 with the computer format. The time to completion fell from 9 minutes with the paper-based protocol to 6 minutes with the computer program.

—Mary Ellen Schneider