software may provide better insulin control in the ICU

NEW YORK (Reuters Health) - A computer algorithm may be more effective than trained nurses at determining insulin dosages in critically ill patients, a new study has found.

When the LOGIC-1 algorithm directed insulin titration, patients had better blood glucose control and a narrower range of daily minimum and maximum levels, the single-center study found.

"Together with the continuous glucose monitoring systems that are on the horizon, we are convinced that LOGIC-Insulin will decrease the work load of hospital staff, while achieving clinical benefit for the patient," Dr. Dieter Mesotten, who led the study at Katholieke Universiteit Leuven in Leuven, Belgium, told Reuters Health.

As Dr. Mesotten reported at the annual meeting of the Endocrine Society in Houston, Texas on June 25th, he and his colleagues randomized 300 patients to glucose control via either the software or staff nurses. At baseline, the patients had similar characteristics and mean blood glucose levels. They were "a heterogeneous mix" of surgical and medical ICU patients. Roughly 21% in both groups had diabetes.

Under observation for an average of 1.9 days, patients in the software group demonstrated better median scores for blood glucose control on the Glycemic Penalty Index (9.8 vs. 12.3 in the nurse group; $p<0.0001$).

They also had a lower Hyperglycemic Index score (2.5 vs 4.2 mg/dL; $p=0.0028$).

Furthermore, their glucose levels were in the target range of 80-110mg/dL for 68.5% of the time, compared to 60.1% of the time in the nurse group ($p=0.00016$).

Patients in the software group also had lesser glycemic variability, with a lower mean daily difference between minimum and maximum blood glucose levels (31 vs. 37 mg/dL; $p=0.045$).

Patients may see greater benefit from this kind of software when other new technology is on the market in the future, other researchers say.

"This study is interesting and important in terms of insuring clear-cut algorithms," says Dr. Andrew Drexler, a professor of medicine at the University of California, Los Angeles, and director of the Gonda Diabetes Center, who was not involved in the research.

"But the next real advance will come with the use of continuous glucose monitoring devices in the ICU," Dr. Drexler told Reuters Health.

After seeing promising results from this first test of algorithm-directed dosing, Dr. Mesotten is planning a larger multi-center test to find out how the program compares to nurses at other hospitals.

If it is successful, this kind of software should be integrated with future devices that can monitor glucose continuously in the hospital, Dr. Mesotten said.

His team developed the LOGIC-Insulin algorithm using Matlab software (MathWorks Inc, Natick, Massachusetts, USA).

The study did not have commercial funding.

By Rob Goodier, 06/07/2012 - 03h15

Bron : Annual meeting of the Endocrine Society 2012