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Development of severe diabetic keto-acidosis with shock after changing interferon- β into interferon- α for chronic hepatitis C

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Sir: Development of insulin-dependent diabetes [1] and non insulin-dependent diabetes [2] during interferon (IFN) therapy has been reported. We here describe the first case of severe diabetic keto-acidosis (DKA) with shock after changing IFN- β into IFN- α in a patient with chronic hepatitis C.

A 39-year-old man was admitted to another hospital for chronic hepatitis C. The patient had been treated with insulin injection for insulin-dependent diabetes mellitus for 13 years and was receiving 22 U of insulin per day as of the day of admission. IFN- β (Mochida, Tokyo, Japan) at a daily dose of 6 million U was started intravenously. His glucose tolerance gradually deteriorated, and 50 U/day of insulin was required to control blood glucose level. Hemoglobin A_{1c} value was 11.5%. After 4 weeks of IFN- β therapy, IFN- β was changed to IFN- α (Mochida, Tokyo, Japan) 10 million U intramuscularly every day. IFN- α therapy was discontinued on the 3rd day because of severe general fatigue but was restarted the next day. Six hours later, the patient developed confusion and hypotension with severe arrhythmia. He was transferred to our emergency room. At that time his arterial blood gas measurements and laboratory results were the following: pH, 6.832; base excess, -28.6 mmol/L; HCO₃⁻, 2.2 mmol/L; blood

glucose, 76.8 mmol/L; total ketone body, 14320 μ mol/L; potassium, 8.5 mmol/L; Hemoglobin A_{1c}, 14.3%; fructosamine, 664 μ mol/L; 1.5-anhydroglucitol, 27.6 μ g/mL. DKA with shock was diagnosed. All virus antibodies and autoimmune antibodies measured were negative. He was moved to the intensive care unit (ICU) and received insulin under mechanical ventilation. Hemodynamic supports and continuous hemodiafiltration (CHDF) were started. IFN- α therapy was discontinued. Three days after admission to the ICU, CHDF was stopped and extubation was performed. He was discharged from the ICU in good condition at 5 days after admission.

The occurrence of a change in IFN type inducing DKA with shock has not been reported previously. Our case suggests that IFN- α has stronger effects in impairing glucose tolerance than does IFN- β . IFN- α and IFN- β synergistically deteriorate the glucose tolerance of diabetic patients. Plataniias et al. [3] found that the differences in IFN- α and IFN- β signaling cascade at the receptor level. These differences may explain the acute progression of glucose intolerance after changing IFN- β into IFN- α in our patient. However, clear mechanisms as to why a change in IFN type impairs glucose tolerance remain to be elucidated. We call to physician's

attention this phenomenon concerning changing IFN type.

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