COMMENTS AND RESPONSES

Cortisol Secretion in Patients With Type 2 Diabetes: Relationship With Chronic Complications

Response to Castillo-Quan and Pérez-Osorio

Several papers focused on the possible link between cortisol secretion and physiological and pathological cerebral aging (1,2). The neurological (mainly limbic-hippocampal) degenerative modification during aging has been suggested to be responsible for a hyperactivity of hypothalamic-pituitary-adrenal (HPA) axis, and an age-related decrease of HPA sensitivity to cortisol feedback has been reported (2).

In our study (3), although overt alterations of the sleep-wake cycle and depression were exclusion criteria, we did not perform a deep evaluation of the psychological status and cerebral function of our subjects with type 2 diabetes. Thus, we cannot exclude that our findings of an enhanced HPA axis activity in patients with complicated type 2 diabetes may have been influenced by a difference in neuropsychological conditions between the two groups of patients (i.e., complicated and not complicated). Nevertheless, since the two groups were comparable as far as age, a difference in age-related cerebral function between the two groups is unlikely.

On the basis of our findings, it is not possible to draw conclusions about causality. Indeed, the presence of enhanced HPA axis activity may be constitutive or a precocious sign of cerebral aging (1), contributing in worsening the metabolic control of type 2 diabetes and, therefore, inducing a higher prevalence of diabetes complications. On the other hand, increased HPA axis activity may be a response to a stress condition (4), determined by the presence of diabetes complications. Similarly, the possible causal relationship between the HPA axis secretion and the psychoneurological status has not been ascertained.

Thus, we completely agree with the suggestion by Castillo-Quan and Pérez-Osorio (5) that it would be important to evaluate the effect of therapies able to modulate HPA axis activity on the developing and the progression of type 2 diabetes complications and physiological and pathological cerebral aging.

IACOPO CHIODINI, MD[1]
GUIDO ADDA, MD[2]
PAOLO BECK-PECCOZ[1]
EMANUELA ORSI, MD[1]
BRUNO AMBROSI[3]
MAURA AROSIO[1,2]

From the [1]Endocrine Unit, Department of Medical Sciences, University of Milan, Fondazione Policlinico, Mangiagalli e Regina Elena, IRCCS, Milan, Italy; the [2]Department of Endocrinology, San Giuseppe-Milanocuore Hospital, Fatebenefratelli Research Association, Milan, Italy; the [3]Unit of Endocrinology, Department of Medical and Surgical Sciences, University of Milan, IRCCS Policlinico San Donato Institute, San Donato Milanese, Milan, Italy.

Address correspondence to Iacopo Chiodini, MD, Endocrine Unit, Department of Medical Sciences, University of Milan, Fondazione Policlinico, Mangiagalli e Regina Elena, IRCCS, Via Francesco Sforza 35, 20122 Milan, Italy. E-mail: iacopo.chiodini@email.it.

DOI: 10.2337/dc07-0271

References

1. Ferrari E, Cravello L, Muzzoni B, Casarotti D, Paltro M, Solerte SB, Fioravanti M, Cuzzoni G, Pontiggia B, Magri F: Age-related changes of the hypothalamic-pituitary-adrenal axis: pathophysiological correlates. *Eur J Endocrinol* 144:319–329, 2001
2. Sapolsky RM, Krey LC, McEwen BS: The neuroendocrinology of stress and ageing: the glucocorticoid cascade hypothesis. *Endocr Rev* 7:284–301, 1986
3. Chiodini I, Adda G, Scillitani A, Coletti F, Morelli V, Di Lembo S, Epaminonda P, Masserini B, Beck-Peccoz P, Orsi E, Ambrosi B, Arosio M: Cortisol secretion in patients with type 2 diabetes: relationship with chronic complications. *Diabetes Care* 30:83–88, 2007
4. Richardson AP, Tayek JA: Type 2 diabetic patients may have a mild form of an injury response: a clinical research center study. *Am J Physiol Endocrinol Metab* 282:1286–1290, 2002
5. Castillo-Quan JI, Pérez-Osorio JM: Cortisol secretion in patients with type 2 diabetes: relationship with chronic complications (Letter). *Diabetes Care* 30:e49, 2007. DOI: 10.2337/dc07-0104