

BLOOD TYROSINE DETERMINATION AS A TOOL FOR TAMING GLUCOCORTICOIDS

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Glucocorticoid (GC) preparations are used in medicine for 70 years as the most efficient anti-inflammatory agents also possessing anti-allergic, immunosuppressive and antitoxic properties. However, the use of these unique pharmaceuticals is associated with serious side effects and difficulty of their withdrawal. The side effects of GC preparations are associated with their hormonal nature. Vitally important GC hormones directly or indirectly participate in the regulation of virtually all metabolic reactions and physiological processes and possibly, just the multiplicity and diversity of effects of GCs prevented finding a specific parameter representing the organism's provision with GCs. Nevertheless, it is reasonable to search for such a parameter among manifestations of regulatory action of GC hormones. The most pronounced example of the regulatory action of GCs is synthesis of the hepatic enzyme tyrosine aminotransferase which determines the free tyrosine level in blood. Observations of blood tyrosine behavior in patients with systemic lupus erythematosus and the retrospective comparison with GC therapy (doses, regimen and results) allowed us to suppose that blood tyrosine could serve a desired index of tissue provision with GCs. In patients with bronchial asthma, the increased blood tyrosine during the period of attacks suggested a relative insufficiency of GC hormones. Blood tyrosine level was normal in children with adrenogenital syndrome (virilizing adrenal dysfunction) with a complete compensation of the genetic defect due to substitutive GC therapy and was increased in the non-compensated patients. The most demonstrative dependence between blood tyrosine and GCs was observed after adrenalectomy in rats and on adrenalectomized rats after injection removal of GCs. It seems that GC therapy is efficient until it compensates an insufficient provision of the body with GC hormones during the disease when the need in them can be increased. Blood tyrosine level used as a laboratory test makes it possible to realize an individualized approach for prescribing and monitoring GC therapy, both as anti-inflammatory and substitutive (on taking into consideration the functional competence of the patient's liver!). Blood tyrosine dependence on GCs is similar to that of blood glucose on insulin. One should only understand that in the case of glucose /insulin the glucose level is vitally important, whereas in the case of tyrosine/glucocorticoids tyrosine level should be considered only as a neutral representative index of tissue provision with GCs.

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