ABSTRACT

ANALYSIS OF ACTH LEVELS AFTER HIGH DOSE AND LONG-TERM PREDNISONE THERAPY IN CHILDREN WITH STEROID-SENSITIVE NEPHROTIC SYNDROME (Study at Paediatric Department, Nephrology Division of Dr. Soetomo Teaching Hospital Surabaya)

Background Therapy in children with steroid-sensitive nephrotic syndrome is glucocorticoid. The use of high dose and long-term prednisone of glucocorticoid which can cause the suppressive effect on endogenous steroid production, namely HPA axis suppression which is characterized by the decrease of ACTH levels. The decrease of ACTH levels can decrease cortisol levels so can affect body metabolism process, immune response and brain function.

Objective To analyze ACTH levels in the induction and alternating phase, and to relate with the steroid-sensitive nephrotic syndrome patient's condition both clinical and laboratory data.

Method An observational prospective study with a longitudinal design was conducted from May to October 2016. The patients who fill inclusion criteria of the study were patients who were diagnosed with steroid-sensitive nephrotic syndrome (initial attack, infrequent relapses, frequent relapse and dependent steroid) that received the high dose and long-term prednison therapy. ACTH levels were determined before and after induction phase and four weeks after alternating phase at 08.00-09.30 a.m. This study has been approved ethical clearance by Dr. Soetomo Teaching Hospital Surabaya.

Result 15 patients that consisted of 9 boys and 6 girls showed that there were no significant differences ($p>0,05$) between ACTH levels in each phase. In induction phase, ACTH levels were increased 23.6% from 22.2 ± 13.1 pg/mL to 27.4 ± 23.0 pg/mL and alternating phase also showed that ACTH levels were increased 1.7% from 27.4 ± 23.0 pg/mL to 27.9 ± 22.2 pg/mL ($p>0.05$). Blood glucose and blood pressure profile were within the normal range. Patients did not experience acute dehydration, but patients experienced weight loss as 1.6% and meal frequency increase as 66.7% after the induction phase. Weakness, fatigue, nausea, vomiting, and abdominal pain were found only 7% patients after the induction phase.

Conclusion Based on this study, it can be concluded that HPA axis suppression did not occur after the high dose and long-term prednisone therapy in the induction and alternating phase which is showed by ACTH levels average in normal range. It was also supported by the absence of clinical and laboratory data that showed signs of HPA axis suppression.

Keywords Nephrotic syndrome (NS), Adrenocorticotropic Hormone (ACTH), High-dose prednisone, HPA axis suppression, Induction phase, Alternating phase.