

Leptin and Neuropeptide Y Levels in Newborns

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- Introduction:** Leptin is a hormone produced from fatty tissue that controls food intake through leptin receptors in the hypothalamic arcuate nucleus. In the regulation between energy intake and consumption, neuropeptide Y (NPY) increases appetite while leptin reduces it, by suppressing NPY secretion. Leptin concentrations are related to fatty tissue; leptin levels decrease in lipodystrophic conditions, anorexia and hunger, and increase in satiation and weight gain. It has been suggested that leptin triggers precocious activation of hypothalamic-pituitary-gonadal axis in puberty. Leptin has been shown to play a trigger role in the onset of puberty in boys. Leptin is a metabolic signal protein that informs the hypothalamus that sufficient energy for pubertal development has been stored. Leptin levels gradually increase until birth and decline dramatically after birth in healthy neonates. This may be important for the stimulation of feeding behavior, fetal development and the acquisition of energy homeostasis in the neonate.
- Aim:** Several studies have investigated leptin and NPY levels in children, but the information for newborns in the literature is limited. The purpose of this study was to determine leptin and NPY levels in newborns aged 14-28 days.
- Materials and Methods:** This prospective study was performed in the Erzurum Atatürk University Medical Faculty Research Hospital Neonatal Clinic, Turkey, between July and December 2014. Sixty-two 14-28-day-old babies, 26 female and 36 male, were included. Patient age, height and body weight were recorded. Feeding status was also recorded. Babies were divided into two groups, those receiving breastfeeding only and those receiving breastfeeding and formula. Plasma leptin levels were measured using enzyme amplified sensitivity immunoassay.
- Results:** The mean leptin level in 14-28-day-old girls was 4.25 ± 3.08 ng/mL, and the mean NPY level 24.79 ± 9.87 ng/mL. The mean leptin level in 14-28-day boys was 3.49 ± 2.52 ng/mL, and the mean NPY level 25.80 ± 9.58 ng/mL. No significant difference was determined between leptin ($p=0.228$) or NPY ($p=0.144$) in terms of feeding status. No significant difference was also observed between the sexes in terms of leptin or NPY levels (leptin $p=0.775$ and NPY $p=0.687$).
- Conclusion:** There were no differences in terms of feeding status and sex in leptin and NPY levels in the neonatal period.

| Percentile | Girl (n:26) | | Boy (n:36) | | Allcases (n:62) | |
|------------|-------------|----------------|------------|----------------|-----------------|----------------|
| | Leptin | Neuropeptide Y | Leptin | Neuropeptide Y | Leptin | Neuropeptide Y |
| 3 | 1,26 | 7,70 | 1,08 | 8,91 | 1,23 | 8,67 |
| 10 | 1,34 | 10,64 | 1,48 | 10,98 | 1,47 | 11,15 |
| 25 | 1,72 | 19,73 | 1,76 | 21,15 | 1,76 | 19,75 |
| 50 | 2,31 | 22,87 | 2,45 | 24,85 | 2,44 | 23,62 |
| 75 | 7,02 | 34,01 | 4,42 | 34,55 | 6,28 | 34,01 |
| 90 | 8,73 | 39,85 | 8,13 | 40,12 | 8,18 | 40,03 |
| 97 | 11,32 | 40,45 | 10,03 | 42,60 | 10,25 | 41,19 |

Table. Patients' plasma leptin and neuropeptide Y levels

3,10,25,50,75,90,97 percentile values