Vitamin D supply for children and adolescents with cancer in the South of Russia

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Objective. To assess the supply of vitamin D in children and adolescents with cancer in the Stavropol Territory (45° north latitude).

Methods. We examined 36 children with cancer (18 boys and 18 girls). There were 11 children (30.6%) aged from 0 to 3 years, 16 (44.4%) — from 4 to 10 years, 9 (25.0%) children from 11 to 18 years. The average age is 7.9 ± 0.9 years.

Results. Leukemia was revealed in 19 (52.8%) children, solid tumors — in 9 (25.0%), lymphomas — in 8 (22.2%) children.

The median calcidiol level was 17.5 [12.6–23.4] ng/ml. A deficiency of vitamin D (less than 20 ng/ml) was detected in 21 (58.3%) children, a deficiency at the level of 20–30 ng/ml — in 10 (27.7%), a level of more than 30 ng/ml — in 5 (13, 9%) of examined children.

Median 25 (OH) D in children with leukemia was 21.2 [14.6–22.4] ng/ml, with solid tumors — 16.2 [9.3–16.4] ng/ml, with lymphomas — 15.8 [11.7–22.8] ng/ml. Nine (47.4%) children with leukemia, 7 (77.8%) with solid tumors and 5 (62.5%) with lymphomas had a serum calcidiol level of less than 20 ng/ml, deficiency of 20–30 ng/ml was detected in 6 (31.6%), 1 (11.1%) and 3 (37.5%) children, respectively, the level of more than 30 ng/ml was detected in 4 (21.0%) children with leukemia and 1 (11.1%) of a patient with a solid tumor.

The median vitamin D supply in children from 0 to 3 years old was 16.6 [9.7–21.7] ng/ml, from 4 to 10 years old — 19.8 [14.7–24.8] ng/ml, from 11 to 18 years old — 16.8 [10.5–17.2] ng/ml. Vitamin D deficiency (less than 20 ng/ml) was detected in 6 (54.6%) children under 4 years old, in 8 (50.0%) children from 4–10 years old and 7 (77.8%) adolescents of 11 years old and older ($p < 0.05$); insufficiency with the level from 20 to 30 ng/ml was detected in 3 (27.3%), 6 (37.5%) and 1 (11.1%) children, and the level of more than 30 ng/ml was found in 2 (18.1%), 2 (12.5%) and 1 (11.1%) children, respectively.

Conclusion. In the south of Russia, the majority (86.0%) of children and adolescents with cancer have a 25 (OH) D level of less than 30 ng/ml. Level of 25 (OH) D did not significantly depend on the type of cancer. Adolescents with cancer are at risk for vitamin D deficiency (less than 20 ng/ml).