

Pituitary nanism: epidemiological indicators in the Republic of Dagestan

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Objective: to study the epidemiological indicators of pituitary nanism (PN) in the Republic of Dagestan (RD).

Materials and methods. The data of the state register of PN in the RD from 2008 to 2018 are analyzed.

Results. Analysis and use of the epidemiological indicators of the incidence of PN allows us to predict and effectively apply the funds allocated for the rehabilitation of patients with PN. The use of standard methods for assessing physical development and federal recommendations for the diagnosis and management of patients with PN can reduce the number of false positive and false negative diagnoses. The distribution of morbidity and morbidity in the whole of the RD, in rural areas and cities was studied.

Conclusion. The epidemiological indicators of hypopituitarism in children remain at a fairly high level.

Keywords: hypopituitarism, pituitary nanism, children, adolescents

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Pituitary nanism (PN) is an orphan disease, which is one of the frequent causes of stunting due to endocrine pathology. The disease may be accompanied by a partial or complete loss of synthesis of tropic hormones of the pituitary in connection with the pathology of the pituitary or hypothalamus [1, 2].

The most pronounced symptom of PN in children is low growth, which is caused by a partial or complete loss of secretion of growth hormone. In adolescence, hypogonadism can also occur. Diagnostic and rehabilitation measures for PN are high cost, but justified from a social and eco-

nomic point of view [2]. To ensure the effectiveness of rehabilitation of patients with PN, it is necessary to have reliable epidemiological indicators for this pathology.

Purpose: to study and compare the epidemiological indicators of pituitary nanism in the period from 2008 to 2018 in the whole Republic of Dagestan (RD), rural areas and cities.

Material and methods

The study included all newly identified and registered cases of pituitary dwarfism for 2008-2018 in the RD. For a comparative analysis of the incidence rate in gender and environmental groups, the primary and total

incidence rates per 100,000 children and adolescents were calculated.

Results

Gender distribution revealed that the general and primary incidence of PN in RD prevailed among boys in 2016 [4, 5]. The results are presented in figures 1 and 2.

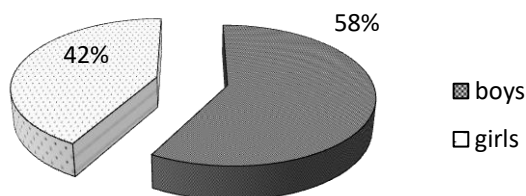


Figure 1. Distribution of patients with pituitary nanism by sex, according to the general morbidity in the Republic of Dagestan.

In 2008, the total incidence of PN in children was 28.1 per 100,000 children (in absolute terms, 179 children). By 2018, the overall incidence of PN has decreased to 18.9 per 100,000 children (in absolute

terms, 142 children). When analyzing this indicator among children from rural areas and cities, it was revealed that the overall morbidity decreased in children from rural areas to a greater degree - from 33.1 in 2008 to 15.9 per 100,000 children in 2018 (in absolute expression from 129 to 73).

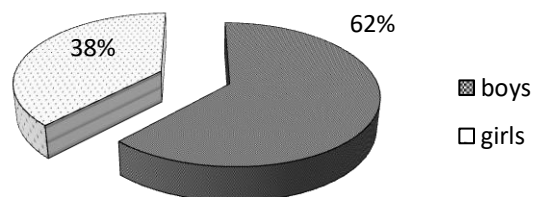


Figure 2. Distribution of patients with pituitary nanism by sex, according to the primary morbidity in the Republic of Dagestan.

On the contrary, the overall incidence of PN among children from 2008 to 2018 increased from 20.2 to 23.2 per 100,000 children (in absolute terms, from 50 to 68).

Table 1. Indicators of the general incidence (per 100,000) of pituitary nanism of children and adolescents of the Republic of Dagestan for 2008-2018

Population		General incidence of pituitary nanism according to RD										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Childre	RD	28,1	37,1	30,6	26,8	24,6	23,4	23,6	27,7	28,5	22,7	18,9
	Village	33,1	39,8	32,5	26,5	24,2	23,1	23,3	26,9	16,1	23,1	15,9
	Town	20,2	33	27,4	27,3	25	23,7	24	28,9	30,9	22,4	23,2
Teens	RD	52,3	69,3	64,8	43,2	36,2	39,6	44,4	67,5	88,8	79,6	60,2
	Village	46,2	57,9	57,4	58,5	28,5	35,9	36,2	64,9	31,4	82,6	64,3
	Town	63,6	90,9	76,9	17,9	47,3	45,1	56,4	71,3	118,5	75,7	54,8

RD - Republic of Dagestan.

Table 2. The primary incidence rate (per 100,000) of pituitary nanism of children and adolescents of the Republic of Dagestan for 2008-2018

Population		Primary incidence of pituitary nanism according to RD										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Childre	RD	9,3	10,4	6,1	1,8	1,9	3,4	2,8	4,3	4,7	2,7	2,3
	Village	9,5	11,9	7,6	1,7	1,4	3,2	2,5	4,7	4,7	3,3	1,5
	Town	8,9	8,2	5,3	2,1	2,6	3,7	3,3	3,7	4,6	2,4	3,4
Teens	RD	8,4	16	5,4	2,7	3,2	6,7	8,3	12,8	4,9	8,8	1,5
	Village	4	8,9	5,4	2,2	4,7	6	8,2	12	6	2,6	1,3
	Town	8,9	29,6	5,4	3,6	2,2	6,7	8,5	13,9	3,4	16,8	1,7

RD - Republic of Dagestan.

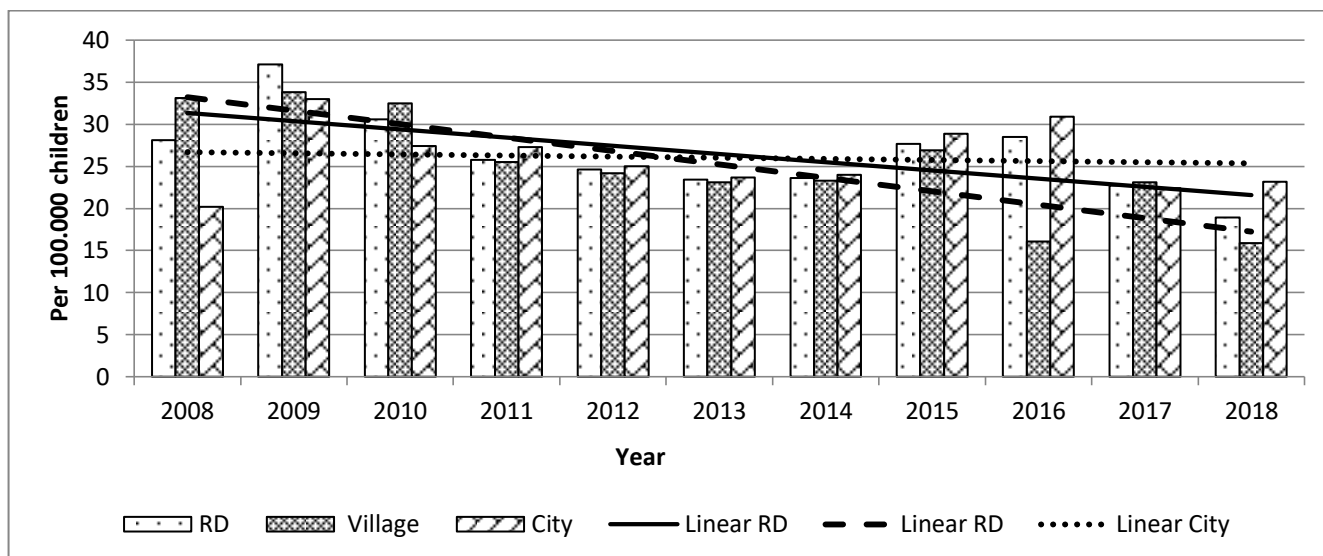


Figure 3. Dynamics of the total incidence (per 100,000) of pituitary nanism of children from 2008 to 2018 in the Republic of Dagestan (RD), rural and urban areas.

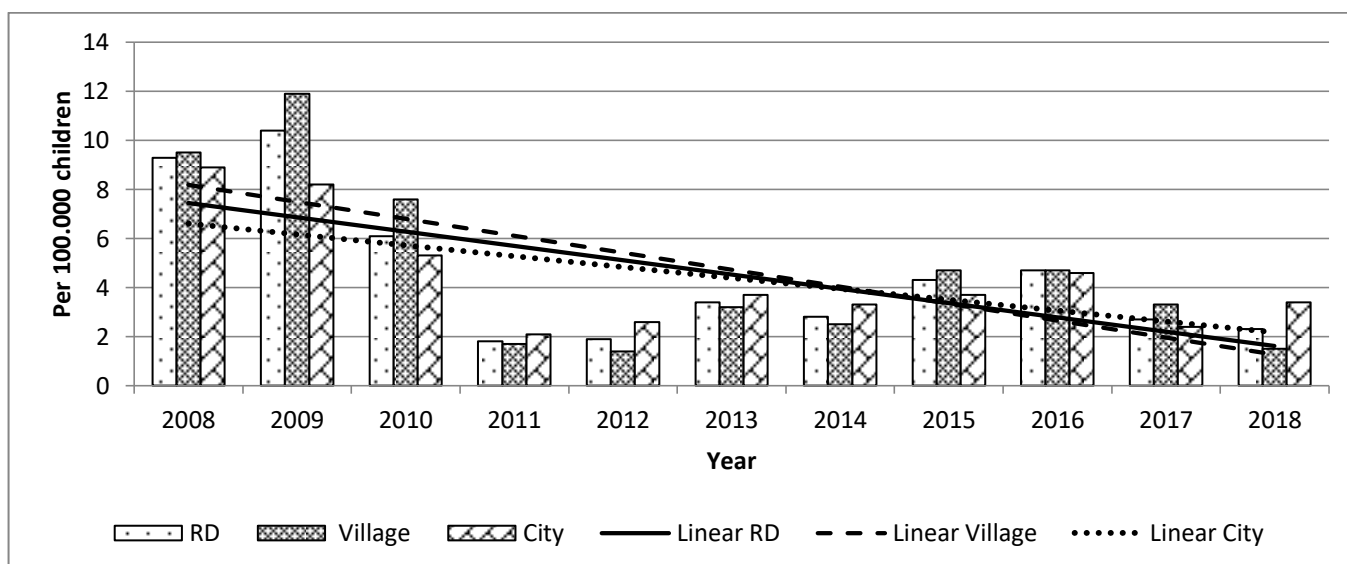


Figure 4. Dynamics of the primary incidence (per 100,000) of pituitary nanism in children from 2008 to 2018 in the Republic of Dagestan (RD), in rural and urban areas.

Perhaps this is due to the urbanization of the population. In the analysis of the primary incidence, a decrease was observed in the whole of the Republic of Dagestan, rural areas and cities. However, in 2018, the primary incidence of PN in children in cities significantly exceeded that in children from rural areas and amounted to 3.4 and 1.5 per 100,000 children, respectively. It can be assumed that this is due to better access to specialized endocrinological care (Figures 2 and 3; Tables 1 and 2).

When analyzing the epidemiological indicators (general and primary morbidity) of PN in adolescents from 2008 to 2018, there

is an insignificant trend in the overall RD rate for an increase in the overall morbidity from 52.3 to 60.2 cases per 100 000 adolescents, with a predominant increase in rural areas from 46.2 to 64.3 per 100,000, with a simultaneous slight decrease in adolescents from cities from 63.6 to 54.8 per 100,000.

Primary incidence of PN among adolescents as a whole in RD over the past 10 years has decreased from 8.4 to 4.9 per 100,000 adolescents. Such a trend is characteristic of primary morbidity both in rural areas and in cities.

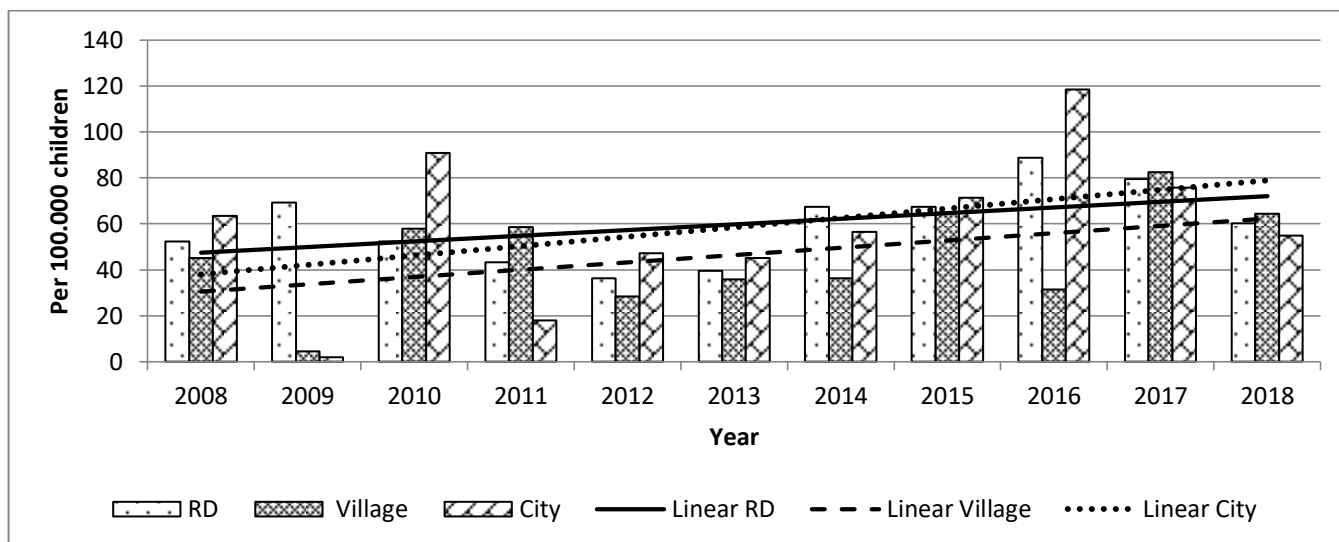
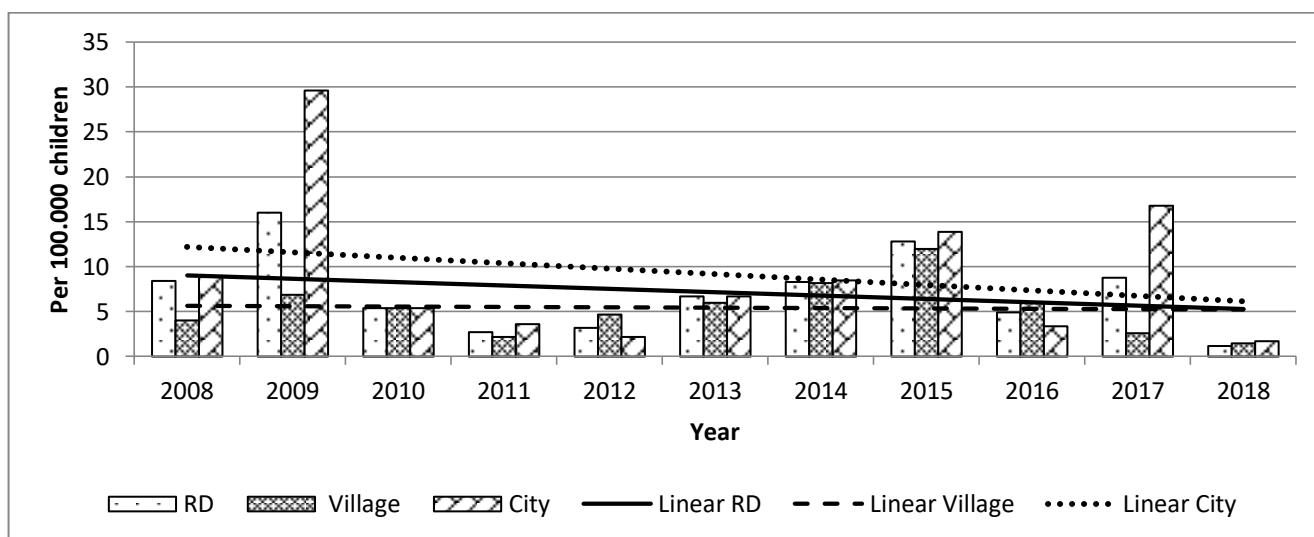


Figure 5. Dynamics of the total incidence (per 100,000) of pituitary nanism among adolescents in the Republic of Dagestan (RD), in rural and urban areas from 2008 to 2018.



Picture 6. Dynamics of the primary morbidity (per 100,000) of pituitary nanism among adolescents of the Republic of Dagestan (RD), in rural and urban areas from 2008 to 2018.

However, the primary incidence of PN in adolescents is more stable from 2008 to 2018 and is 4.0 and 3.4 per 100,000, respectively. It is possible that a significant excess of the primary incidence of PN in adolescents in rural areas over that in adolescents from cities (6.0 and 3.4 per 100,000, respectively) is due to the late diagnosis of PN, when clinical symptoms in the form growth retardation becomes pronounced.

The indicators of the general incidence of PN in the Republic of Dagestan remain high and exceed the figures for the Russian Federation - 14.4 per 100,000 adolescents [3].

According to the results of molecular genetic studies, isolated somatotrophic hormone deficiency was diagnosed in 34% of patients (deletion in the growth hormone 1 gene); multiple deficiency of adenohypophysis hormones was detected in 15% of patients (deletion in the prophet of Pituitary-specific positive transcription factor 1 gene), in other patients, significant mutations were not detected. Congenital hypopituitarism was proven in 43% of the examined children with a diagnosis of PN. As a result of re-testing and examination in 2017-2018, 90 children were left in the register for PN, who are prescribed for somatropin replacement therapy. The Republic has accumulated experience with the use of growth hormone in children from one

year of age. Early diagnosis of somotropic hormone deficiency allows a good rehabilitation effect in patients [1].

Conclusion

Analysis and use of epidemiological indicators of the incidence of PN make it possible to predict and effectively use the funds allocated for the rehabilitation of patients with PN. The use of standard methods for assessing physical development and federal recommendations for the diagnosis and management of patients with PN can reduce the number of false positive and false negative diagnoses.

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