CLINICAL AND HORMONAL CHARACTERISTICS OF AGGRESSIVE PITUITARY ADENOMAS

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INTRODUCTION

The pituitary gland is a neuroendocrine organ located in the Turkish saddle at the base of the brain, which is surrounded laterally by the cavernous sinuses, and chiasm from above (1). The carotid arteries pass through the cavernous sinuses on both sides, giving branches for blood supply to the pituitary gland (2). The pituitary consists of the adenohypophysis and neurohypophysis. The adenohypophysis originates from the oral ectoderm, hence its epithelial phenotype, while the neurohypophysis develops from the neuroectoderm at an early stage of embryogenesis (3). The pituitary gland, together with the hypothalamus, is crucial for growth, development and reproduction and in maintaining vital homeostasis through secreting hormones that regulate peripheral endocrine glands or through direct action on target cells.

Pituitary adenomas occur with a prevalence of 80-100 cases per 100,000 population and an annual incidence of 4 per 100,000 cases. The vast majority of pituitary adenomas are benign in nature and do not have the ability to metastasize (4)

Despite the fact that pituitary adenomas are considered benign, from 25 to 55% are invasive and aggressive. The prevalence of aggressive pituitary adenomas is currently unclear, while the incidence is 0.1-0.5 per 100,000 cases.

Currently, a number of scientific studies are being conducted in the world in order to study the features of accurate diagnosis of this disease in the early stages.

The 2018 European Association of Endocrinologists (ESE) Clinical Practice Guidelines for the Treatment of Aggressive pituitary Adenomas (AAG) and carcinomas proposed a more clinically oriented definition of aggressive pituitary adenomas (5,6).

According to the domestic literature, a number of studies were conducted in Uzbekistan, where works aimed at early diagnosis, management and introduction of new methods of therapy of neuroendocrine tumors, in particular pituitary adenomas, clinical and epidemiological features of somatotropin, corticotropin, inactive pituitary adenomas, radiation therapy with somatotropin, clinical characteristics of prolactin were studied. While it should be noted that the work aimed at studying the features of aggressive forms of pituitary adenomas, the study of clinical and molecular genetic aspects is in demand and not fully understood. There are still no attempts to conduct a meta-analysis of the results of individual studies on the prevalence of aggressive adenomas among hormonally active and inactive forms, as well as to identify early markers of aggressive pituitary adenomas.

The aim of the study was to study the clinical and hormonal characteristics of aggressive pituitary adenomas depending on gender and age characteristics.

Materials and methods of the study: The object of the study were 100 patients with a confirmed diagnosis of pituitary adenoma (ICD10D35.2) who applied to the Turakulov Academy of Medical Sciences for the period from 2020 to 2021.

To solve research problems, biochemical and hormonal studies were used as general clinical studies (PRL-prolactin, STH-growth hormone, IGF-1- insulin-like growth factor-1, LH-luteotropic hormone, FSH-follicle-stimulating hormone, ACTH-adrenocorticotropic hormone, TSH-thyroid-stimulating hormone, blood cortisol and daily urine) and statistical methods.

Research results

The I-th main group consisted of 35 patients with noninvasive adenoma growth. Group IIA consisted of 26 patients with invasive growth of 1-2 degrees,

group IIB 39 patients with invasive growth of 3-4 degrees according to the Knops classification. The average age of patients in the first group was 33.9 (SD±10.0) years, second, and group 37.3 (SD±9.3) and B groups 40.0 (SD±14.3). The assessment of the age category of patients showed that the tendency of invasiveness increases with age. In group I, 45.7% (n=16) were patients aged 10-30 years, 20% (n=7) were aged from 30 to 40 years, 28.6% (n=10) aged 40-50 years and 5.7% (n=2) aged>50 years. Invasive grade 1-2 adenomas (group II) prevailed at the age of 40-50 years (n=11), which is 2.5 times more than non-invasive adenomas (group I). Moreover, at the age of >50, invasive adenomas of grade 3-4 (group IIB) were most observed, which is almost 5 and 7 times more than in groups I and II-A, respectively. (Tab 1)

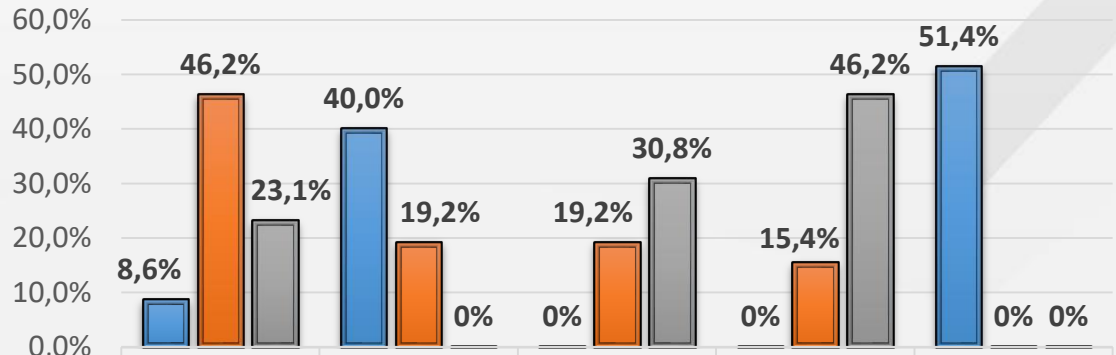
Age and sex characteristics of the main groups (n=100)

	I (n = 35)		**IIA (n = 26)**		**IIБ (n = 39)**	
	%	n	%	N	%	
Male						
Gender	4	11.4	8	30.8	17	43.6
Women	31	88,6	18	69,2	22	56,4
Age (cp.SD)	33.9 ± 10.3		37.3 ± 9.3		40.0 ± 14.3	
Age category						
10-30	16	45.7	7	26.9	13	33.3
30-40	7	20.0	7	26.9	9	23.1
40-50	10	28.6	11	42.3	6	15.4
>50	2	5.7	1	3.8	11	28.2

Note: the percentage of patients in the groups is given in relation to the total number of patients in each group.

Next, we analyzed the hormonal characteristics of the studied patients. As can be seen from Figure 4, 8.6% (n=3) of patients with noninvasive adenomas were diagnosed with prolactin-secreting adenoma (PRL), 40% (n=14) of patients with ACTH-dependent Cushing's syndrome and 51.4% (n=18) inactive microadenmas (incendatalomas).

Among invasive grade 1-2 adenomas (group II), prolactinomas accounted for 46.2% (n=12), Cushing's syndrome and somatotropinomas were detected in equal proportions - 19.2% (n=5), while invasive grade 3-4 adenomas (group IIB) were detected in 46.2% (n=18) with NA, 30.8% (n=12) in somatotropinoma, 23.1% (n=9) in patients with prolactinoma (Fig. 2).



	ПРЛ	АКТГЗ.СК	Somatotropinomas	НАГ	Microadenoma (Incidentaloma)
I (n = 35)	8,6%	40,0%	0%	0%	51,4%
IIA (n = 26)	46,2%	19,2%	19,2%	15,4%	0%
IIБ (n = 39)	23,1%	0%	30,8%	46,2%	0%

Fig.3.1. Distribution of groups by hormonal activity

Conclusions

Thus, hormonal differentiation of the studied aggressive adenomas showed that among invasive adenomas, inactive pituitary adenomas (NAG) occupy the first place in frequency, somatotropinomas take the second place and prolactinomas with invasive aggressive growth take the third place. While the main part (40%) of non-invasive pituitary adenomas were АКТГЗ-СК (n=14).

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