International Journal of Medicine Research
ISSN: 2455-7404; Impact Factor: RJIF 5.42
Received: 06-03-2019; Accepted: 08-04-2019
www.medicinesjournal.com
Volume 4; Issue 3; July 2019; Page No. 18-20

Size parameters of glands of the vaginal vestibule with anomalies of the genital organs

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Abstract
Objective: The purpose of the study was to identify the size parameters of the small glands of the vaginal vestibule with some developmental anomalies of the internal genital organs.
Material and methods. Microscopic method was used to study the glands of the vaginal vestibule in 18 newborn girls with anomalies of the internal genital organs. Fixed pieces after alcohol treatment were poured into paraffin. Sections 5-7 microns thick were stained with hematoxylin-eosin and van Gieson. A reaction was conducted on Craigberg.
Results: The analysis showed that, in norm, the small glands of the vestibule of the child's vagina at the time of birth are capable of active secretion. In newborn girls with anomalies of the urogenital apparatus, the thickness and area of the initial section, the number of initial parts, the area of the initial part on the cut, the number of glandulocytes in the initial part of the glands decreases.

Keywords: Glands of the vaginal vestibule, anomalies of the genital organs

Introduction
The small glands of the walls of hollow digestive and respiratory organs are described in sufficient detail, their structural and functional features are devoted to summaries and numerous scientific works [1, 2, 3, 4, 5]. In this case, against the backdrop of the few works devoted to the bladder, the female urethra [6, 7]; almost no studies on the glands of the vestibule. The only aiming macroscopic examination of these glands was performed in the middle of the 20th century [8]. Naturally, this work does not meet the requirements of time and the principles of evidence-based medicine, lacks morphometric approaches. There are no morphological data on the structural and size parameters of glands in the case of developmental anomalies of the internal female genital organs.
This is wrong, given the high level of the benign and malignant pathology of the vulva in the population, not always favorable prospects for its treatment [9, 10, 11], and the significant physiological protective role of these glands in maintaining normal vaginal microbiocenosis [12].
The purpose of the study: to reveal the structural features of the small glands of the vaginal vestibule with some developmental anomalies of the internal genital organs.

The aim of the ework
Microscopic method was used to study the size parameters glands of the vaginal vestibule in newborn girls with anomalies of the internal genital organs.

Material and methods
Microscopic method was used to study the glands of the vaginal vestibule in newborn girls with anomalies of the internal genital organs, in the absence of visual disturbances in the structure of the vaginal vestibule (assembly group). This group includes the following types of anomalies: unilateral aplasia of the uterine tube -5 cases, absence of the right ovary-1 case, congenital right ovarian torsion - 1 case, uterus bicorne - 1 case.
The comparison group consisted of 10 cases when newborn girls had no pathological changes in the urinary and genital organs. The actual material of the research was recruited in the morgues of the Union of Forensic Medicine and Pathological Anatomy of the Ministry of Health of the Republic of Azerbaijan and the Department of Human Anatomy of the Azerbaijan Medical University. While working with sectional material, the requirements of the Federal Law of 12.01.1996 No. 8-ФЗ "On Burial and Funeral Affairs" are taken into account.
Fixed pieces after alcohol treatment were poured into paraffin. Sections 5-7 microns thick were stained with hematoxylin-eosin and Van Gieson. In the Van Gieson, iron hematoxylin Weygert and an acidic mixture of picrofuxine were used. A reaction was conducted on Craigberg. The resulting micro preparations were photographed under the same conditions and regimes in the light-optical microscope "Micro Optix" (Germany).
While working on the pictures, a specialized vector program "Canvas" for Windows 7 was used. The digital data obtained during the study were subjected to statistical processing. At the same time, general recommendations for medical and biological research were observed [13].

Results & Discussion
According to our data, the small glands of the vaginal vestibule have a structure typical for the glands of the mucous membranes of internal organs. In small glands, there are initial sections and excretory ducts, the main one of which ends with a mouth on the surface of the integument epithelium. The analysis showed that the small glands of the vestibule are normally fully formed by the time of childbirth, capable of active secretion (the turquoise color of secretion in the Craigberg reaction). Obviously, it is associated with a qualitative change in vital activity from the moment of birth, the need for the realization of the protective function of the epithelium of the vaginal vestibule.

In newborn girls, the thickness of the initial section of the glands of the vaginal vestibule is normal at 33.4 ± 1.1 μm, the area of the initial section (on the cross-section of the vestibule wall) is 400.2 + 18.3 mm² 10^{-4}, the number of initial parts in the initial section – 10.5 + 0.9, the area of the initial part on the microscopic section is 26.0 + 1.1 mm² 10^{-4}, the number of glandulocytes on the section of the initial part is 12.3 + 0.6, the stromal content in the initial section is 3.9 + 0.4%, the diameter of the lumen of the excretory duct – 4.3 + 0.2 μm (fig. table).

At this age, the glands are uniform in shape. Primary (87.9 + 1.1%) glands with one primary department. Glands with two initial departments are detected in 5.7 + 0.2%, with three in 3.7 + 0.3%; glands of complex shape - with four initial sections are rarely defined - in 2.7 + 0.5%.

In the initial section (on the cut) there are 10.5 + 0.9 (from 5 to 14 individually) of the initial parts, the area of the initial part on the cut is equal to - 26.0 + 1.1 mm² 10^{-4}, in the initial part there are 12.3 + 0.6 glandulocytes (from 8 to 15).

We identified significant regressive changes in the glandular apparatus of the vaginal vestibule of newborn girls with anomalies of internal genital organs (table). Thus, in particular, the thickness of the initial gland is reduced by 1.4 times ($p < 0.05$), the area of the initial section of the gland in the transverse section of the vestibule wall is 1.7 times ($p < 0.05$), the number of initial parts in the initial section of the gland - in 1,9 times ($p < 0,05$), the area of the initial part on the cut - in 1,4 times ($p < 0,05$), the number of glandulocytes in the initial part - 1,3 times $p < 0.05$).

In comparison with the control, with anomalies of the internal genital organs, the proportion of the stromal component of the gland is increased (5.3 times, $p < 0.05$). This, obviously, is associated with a decrease in the severity of the parenchyma of the gland (the initial parts, glandulocytes) and the imminent (predictable) weakening of its secretory function.

Girls having anomalies of the internal genital organs, an increase in the lumen of the common duct of glands (in 1.7 times, $p < 0.05$) was revealed. Dilatation of the ducts of the glands reflects a violation of the drainage function of the protocol apparatus, promote the stasis of the secret, its infection [14].

With anomalies of the internal genital organs, the glandular-lymphoid relationships in the walls of the vestibule are broken: cells of the lymphoid series, unlike the control, only occasionally appear near the excretory ducts of the glands. Normally, these cells carry out immune surveillance of secretory processes [9].

Fig. Talbe

Morphometric microanatomical characteristics of the glands of the vaginal vestibule of newborn girls with anomalies of internal genital organs

(X±Sx; min-max).

Table 1

Indicator, dimension		Part of the vaginal vestibule, number of the lymphoid cells			
		Anterior third	Middle third	Posterior third	The vaginal vestibule in general
The thickness of the initial Department (in μm)	Anomalies of the genital organs	18,2+0,8 16,3-22,1	26,2+0,4 21,5-28,2	27,5+0,9 24,2-31,1	24,0+0,8 22,3-28
	The comparison group	30,0+1,1 25,3-34,7	34,2+1,3 26,1-37,2	36,1+2,1 28,0-47,1	33,4+1,1 26,0-35,2
Area of the initial section (in mm² 10^{-4})	Anomalies of the genital organs	200,2+9,9 165,4-240,2	250,5+12,5 210,2-304,5	270,0+9,3 245,5-315,3	240,2+11,7 212,2-300,6
	The comparison group	370,2+17,1 300,0-450,1	430+16,2 360,2-500,1	460,2+11,0 440,1-520,1	400,2±18,3 36-,2-520,
The number of initial parts in the initial section	Anomalies of the genital organs	4,3+0,5 2-6	4,7+0,5 3-7	7,3+0,5 5-9	5,6+0,7 3-8
	The comparison group	8,2+0,6 5-11	10,7+0,5 7-12	12,5+0,6 7-14	10,5+0,9 5-14
The area of the initial part on the microscopic section (in mm² 10^{-4})	Anomalies of the genital organs	18,4±0,7 16,4-21,5	19,2±0,8 17,2-23,2	20,2±0,8 17,3-23,2	19,3±0,7 17,2-23,2
	The comparison group	22,5±1,1 20,1-24,1	25,0±1,1 21,1-26,5	28,2±1,1 24,1-30,1	26,0±1,1 24,1-27,2
The number of glandulocytes on the microscopic section of the initial part	Anomalies of the genital organs	7,2±0,8 5-11	10,3±0,8 7-13	11,3±0,6 8-14	9,6±0,6 7-13
	The comparison group	10,5±0,3 8-11	12,1±0,5 9-13	14,3±0,9 8-16	12,3±0,6 8-15
The stromal content in the initial section (in %)	Anomalies of the genital organs	15,9±1,1 12,7-21,2	20,4±1,2 15,4-24,6	25,4±0,7 21,2-25,8	20,6±1,2 15,4-24,6
	The comparison group	3,2±0,3 2,1-5,2	4,2±0,4 3,1-5,2	4,6±0,3 3,1-6,1	3,9±0,4 3,1-6,0
The diameter of the lumen of the excretory duct (in μm)	Anomalies of the genital organs	6,5±0,4 4,2-7,4	7,5±0,9 6,2-8,5	8,3±0,3 7,2-9,6	7,4±0,4 6,2-9,0
	The comparison group	3,2±0,3 2,1-6,2	4,2±0,3 3,5-6,2	5,5±0,3 4,2-7,0	4,3±0,2 2,8-6,4

Note: Statistically significant difference with the previous group:* – $p_0 < 0,05$; ** – $p_0 < 0,01$; *** – $p_0 < 0,001$

The conclusion. Thus, the analysis revealed significant signs of a "morphological regression" of the small glands of the vestibule and signs of a violation of the "glandular-lymphoid relationships" of this region with anomalies in the development of internal genital organs, which have theoretical and practical importance.

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