Results of surgical treatment of lymphangiomas in children

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Abstract: Lymphangiomas are mature, benign tumors emanating from the lymphatic vessels. Lymphangiomas can be external (cervical, cervical-axillary-thoracic) and internal (mediastinal, internal organs, retroperitoneal, pelvic). The most common are lymphangiomas of the cervical localization - from 74% to 82%. Due to the genetic relationship of lymphangiomas to blood vessels, in particular, to the venous system, their radical removal presents certain difficulties, where they are close to the main vessels of the neck, axillary region, mediastinum and other localizations. There is no consensus on the question of the stages of excision of lymphangiomas, if no one doubts the rationality of a single-stage surgical intervention. There are practically no works that raise the issue of the cosmetic side of surgical interventions taken to remove lymphangiomas. It is possible to radically cure lymphangioma by surgical removal only in 75% of cases.

Keywords: lymphangioma, children, sclerotherapy, surgical treatment

Lymphangiomas arise as a result of malformation of the lymphatic system in the embryo, starting at 6 weeks of gestation (14). They belong to mature, benign tumors arising from the lymphatic vessels. Lymphangiomas can be external (cervical, cervical-axillary-thoracic) and internal (mediastinal, internal organs, retroperitoneal, pelvic). The most common are lymphangiomas of cervical localization - from 74% to 82%, cervical-axillary-thoracic lymphangiomas occur in 6% of patients, mediastinal localization - in 10-16% of patients, in the abdominal organs - 1-2%, retroperitoneal location - y 1-2% of patients, pelvic localization - y 1-2% of patients [1,2,3,4,5,6,7,8,10]

Due to the genetic relationship of lymphangiomas to blood vessels, in particular to the venous system, their radical removal presents certain difficulties, where they are located close to the main vessels of the neck, axillary region, mediastinum and other localizations. In this regard, lymphangiomatous tissue, which is difficult to remove and therefore remains on large vascular trunks, serves as a source of tumor relapses, which occur in 6.4% [9]

In addition, there is no consensus on the issue of the stages of excision of

lymphangiomas. If no one doubts the rationality of one-stage surgical intervention when removing intracavitary localizations of lymphangiomas, then with regard to superficial lymphangiomas, especially those of large size, there are 2 points of view. One group of surgeons considers simultaneous tumor removal advisable [6,10], while another group of surgeons adheres to the stages of the operation. There are practically no works that raise the question of the cosmetic side of surgical interventions undertaken to remove lymphangiomas [3] Radically cure lymphangioma by surgical removal is successful only in 75% of cases [4,6,11].

Target. Analysis of the results of various methods of surgical treatment of lymphangiomas of various locations.

Material and methods. We analyzed the surgical treatment of 186 children with lymphangioma of various locations who were hospitalized in a specialized surgical clinic of Samarkand State Medical University. After a complete clinical and laboratory examination and adequate preoperative preparation, the patients underwent surgical treatment. Depending on the surgical tactics, they were divided into 2 groups: control 162 patients operated on between 1994 and 2015 - they underwent generally accepted traditional surgical treatment, which consisted of complete excision of lymphangioma within the surrounding healthy tissues and main 24 patients who received inpatient treatment in the period from 2016 to 2019, who underwent minimally invasive surgical treatment in the form of sclerotherapy for lymphangioma. This treatment tactic consisted of puncture of the lymphangioma, which was carried out under the control of ultrasound sonography. The contents of the lymphangioma were aspirated, then doxacycline was administered at a concentration of 10-20 mg/ml, followed by 4-fold (once a day) administration of doxacycline into the lymphangioma cavity through the left cannulas. On the 4th day, the cannulas were removed, and control Doppler ultrasound of the residual cavity was performed. In the multi-chamber form of lymphangioma, cannulas, under ultrasound control, were inserted into each individual cavity of the multi-chamber cyst.

Results - Lymphangiomas in children were assessed according to the following indicators: the course of the postoperative period, the presence or absence of suppuration of the residual cavity, the nature of wound healing, the patient's time in hospital (bed-day), duration of fever (days), ultrasound signs of suppuration and relapse of the disease. The table below (Table 1) provides an example of the results of surgical treatment of patients in the control group.

Results of surgical treatment

Localization of lymphangiomas	Deadlines (days) Decreased body temperature Staying in intensive care		Bed day (days)
Cervicocephalic (n-151)	3,2	4,1	*7,7*
Torso (n-28)	*2,6*	*3,9*	*12,8*

Limbs (n-7)	*2,1*	*1,4*	*9,3*
Total (186)	*2,6*	*3,1*	*9,9*

Indicators of the postoperative period in operated patients of the control group.

As can be seen from Table 3.1, on average, in the operated patients of the control group, the normalization of body temperature was on average 3-4 days, the stay in intensive care was about 3-4 days, the average stay of patients in the hospital was 7-13 days.

Unlike the control group, in the main group these indicators were significantly lower, as shown in Table 2.

Indicators of the postoperative period in operated patients of the main group

Localization of lymphangiomas	Deadlines (days) Decreased body temperature Staying in intensive care		Bed-day (days)
Cervicocephalic (n-15)	*2,9*	--	*7,9*
Torso (n-8)	*3,1*	-	*8,1*
Limbs (n-1)	*2,0*	-	*7*
Total (24)	*2,6*	-	*7,6*

Table 2 shows that patients in the main group did not need to stay in the intensive care unit after surgery, since the sclerosing drug was administered under local anesthesia, there were no side effects, and after surgical treatment, they were transferred to a regular inpatient department. In this group of patients, the normalization of body temperature was on average 2-3 days, they were not in the intensive care unit, and most importantly, the period of stay in the clinic did not exceed 8 days.

Despite various treatment methods, in the early postoperative period there were no complications in the form of wound suppuration, disease relapse, or suture dehiscence in the control group.

The study of long-term results is an objective criterion for assessing the effectiveness of surgical treatment of patients with lymphangiomas. When checking long-term results, the objectives were to study the health status of patients. The evaluation criteria were the study of the following factors: clinical signs; condition of postoperative scars and the presence of disease relapse. All treated patients were under clinical observation and periodically underwent examinations in the clinic. Follow-up examination was carried out in periods from 1 year to 15 years.

We considered the long-term results to be good for those individuals who did not have any complaints after surgery, their general physical condition corresponded to their age, postoperative scars do not rise above the surface of the skin, the latter are soft and painless on palpation, there is no relapse of the disease.

The results were considered unsatisfactory when patients complained of pain in the projection of the postoperative scar, the latter is rough, rises above the surface of

the skin, adheres to the underlying tissues and deforms the surrounding soft tissues, and a relapse of the disease is noted (Table 3.3).

Long-term results of surgical treatment of lymphangiomas

Group	Good	Satisfactory	Unsatisfactory	Total
Основная (n=24)	21 (87,5%)	3 (12,5%)	-	24 (100%)
Контрольная (n=162)	117 (72,2%)	37 (22,8%)	H 8 (5%)	162 (100%)
Всего (n=186)	138 (74,2%)	40 (21,5%)	8 (4,3%)	186 (100%)

As can be seen from Table 3, good results were achieved in the main group 21 (87.5%) than in the main group 117 (72.2%). The same results were noted when analyzing the satisfactory results of the treatment; in the main group they were 12.5% to 22.8% in the control group. It should be noted that unsatisfactory results were revealed in the control group - 5.0%, in the main group they were reduced to 0%.

Thus, in the period from 1994 to 2019, 186 children with lymphangioma of various localizations were operated on in 2 SamMU clinics. After a complete clinical and laboratory examination and adequate preoperative preparation, the patients underwent surgical treatment. Depending on the surgical tactics, they were divided into 2 groups: a control group of 162 patients - they underwent generally accepted traditional surgical treatment, which consisted of complete excision of lymphangioma within the surrounding healthy tissues, and a main group of 24 patients who received minimally invasive surgical treatment in the form of sclerotherapy for lymphangioma. This treatment tactic consisted of puncture of the lymphangioma, which was carried out under the control of ultrasound sonography. The contents of the lymphangioma were aspirated, then doxycycline was administered at a concentration of 10-20 mg/ml, followed by 4-fold (once a day) administration of doxycycline into the lymphangioma cavity through the left cannulas. On the 4th day, the cannulas were removed, and control Doppler ultrasound of the residual cavity was performed. In the multi-chamber form of lymphangioma, cannulas, under ultrasound control, were inserted into each individual cavity of the multi-chamber cyst.

Analysis of the immediate results of treatment showed that on average, in the operated patients in the control group, the normalization of body temperature was on average 3-4 days, the stay in intensive care was about 3-4 days, the average stay of patients in the hospital was 7-13 days. In contrast, patients in the main group did not need to stay in the intensive care unit after surgery, since the sclerosing drug was administered under local anesthesia, there were no side effects, and after surgical treatment, they were transferred to a regular inpatient department. In this group of patients, the normalization of body temperature was on average 2-3 days, they were not in the intensive care unit, and most importantly, the period of stay in the clinic did not exceed 8 days.

Despite various treatment methods, in the early postoperative period there were no complications in the form of wound suppuration, disease relapse, or suture dehiscence in the control group.

The study of long-term results is an objective criterion for assessing the effectiveness of surgical treatment of patients with lymphangiomas. The evaluation criteria were the study of the following factors: clinical signs; condition of postoperative scars and the presence of disease relapse. All treated patients were under clinical observation and periodically underwent examinations in the clinic. Follow-up examination was carried out in periods from 1 year to 15 years. Long-term treatment results were assessed on a 3-point scale: good, satisfactory and unsatisfactory. Good results were achieved in the main group 21 (87.5%) than in the main group 117 (72.2%). The same results were noted when analyzing the satisfactory results of the treatment; in the main group they were 12.5% to 22.8% in the control group. It should be noted that unsatisfactory results were revealed in the control group - 5.0%, in the main group they were reduced to 0%.

Conclusions. Analysis of the results of surgical treatment of lymphangiomas of various locations showed that the generally accepted traditional treatment method is quite effective, but requires the patient to be in the intensive care unit after surgical treatment, unlike in the main group, due to the fact that surgical treatment is carried out under local anesthesia. not required. The proposed minimally invasive tactics for treating lymphangiomas allows one to achieve good long-term treatment results in 87.5% of patients and reduce relapse of the disease to 0%.

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