

## Correction of Endogenous Intoxication in Patients With Vascular Tumors of the Nose

*Lutfullaev G.U, Lutfullaev U.L, Nematov U.S, Buriev Sh. A, Khuzhakulova F. A.  
Samarkand State Medical University, Republic of Uzbekistan, Samarkand*

### ANNOTATION

*Benign vascular neoplasms include capillary and cavernous hemangiomas, which, according to most studies, are more common in women. They grow slowly, periodically bleed, gradually increase and can fill the nasal cavity, in addition, tumor processes lead to endogenous intoxication of the body. The level of endogenous intoxication is one of the criteria for the severity of the condition of patients, and therefore its determination and dynamics are of great importance in the treatment of patients with vascular tumors of the nose.*

**KEYWORDS:** *Vascular tumors, nose, hemangioma, endogenous intoxication, lipid peroxidation.*

**Introduction.** The number of patients with benign neoplasms of the nasal cavity has recently increased and is 8-10% of all neoplasms of the head and neck [9,11]. The generally accepted division into benign and malignant in relation to neoplasms of this localization is difficult to carry out, since they lead to functional disorders. Vascular neoplasms include capillary and cavernous hemangiomas, as noted by previous surveys, they are more common in women [15,16]. This suggests that sex hormones are important in the genesis of vascular tumors. Hemangioma is a benign neoplasm of vascular origin with epithelial proliferation. Most often refers to congenital lesions of the skin and oral mucosa, while the nasal cavity and paranasal sinuses are considered an unusual location for hemangiomas. They grow slowly, bleed periodically, gradually increase and can fill the nasal cavity, germinate into the ethmoid labyrinth, eye socket and maxillary sinus, look like a rounded tuberous red-bluish tumor. With a large tumor, in order to clarify its boundaries, it is necessary to perform angiography of the carotid arteries. The treatment is surgical, however, the possibility of massive blood loss must be kept in mind. Relapses are possible with non-radical excision [24].

The most striking symptomatic manifestations of hemangioma are unilateral epistaxis and nasal obstruction. Histologically characterized by vascular proliferation in the submucosal layer, in the form of lobules or clusters, consisting of central capillaries and small branching ducts. Treatment is complete removal, preferably by endonasal endoscopic technique. Unfortunately, the recurrence rate after excision can be as high as 15%. In addition to all of the above, vascular tumors lead to changes in immunity and endogenous intoxication of the body. Endogenous intoxication is a syndrome that is nonspecific in terms of clinical and biochemical manifestations and is caused by a discrepancy between the processes of formation and excretion of products of normal and abnormal metabolism [1,2,4]. With endogenous intoxication, a number of indicators of blood and immunity are disturbed. Clinically, it can manifest itself as a weakness of the state, apathy, a decrease in the desire to move, impaired memory, sleep, irritability, decreased appetite, and with vascular tumors of the nose - impaired nasal function, profuse bleeding and headache [5,12,22].

In a tumor process, in particular, in hemangiomas, due to endogenous intoxication of the body, there is a violation of LPO processes.

**Purpose of the study.** To reveal changes in indicators of endogenous intoxication in patients with vascular tumors of the nasal cavity and optimize surgical treatment.

<https://cejsr.academicjournal.io>

**Materials and methods.** At the Department of Otorhinolaryngology, the Faculty of Postgraduate Education of Samarkand State Medical University (ENT Department) has accumulated extensive experience in managing patients with benign vascular tumors. Over the past 5 years (from October 2015 to December 2020), 31 patients with vascular neoplasms of the nasal cavity were examined (capillary hemangiomas - 9 (29%), cavernous - 22 (71%)), of which men - 14 (45.1%) and women - 17 (54.9%) aged 14 to 62 years. Also, 10 healthy people took part in the studies to compare biochemical parameters.

During the observation period, all patients underwent a complete clinical examination, including the identification of complaints, a detailed history of the disease, examination, palpation of the external nose and projection zones of the SNP, cervical and submandibular lymph nodes; endoscopic examination of ENT organs, radiography, if necessary, CT, MRI of the paranasal sinuses. Among the history data, great importance was attached to the duration of the disease, the nature of the first symptoms, previous examinations, the methods of treatment used and their effectiveness. Information about previous injuries, acute and chronic inflammatory diseases of PN and SNP, and other somatic pathologies were also important. The diagnosis was established using clinical-instrumental and clinical-laboratory - complete blood count, urine, biochemical analysis of blood plasma to study indicators of endogenous intoxication, histological analysis of neoplasms - research methods.

Analysis of the frequency of complaints and the identification of clinical symptoms is an important aspect in the diagnosis of the disease. The dominant clinical symptoms were as follows: headache (69.6%), difficulty in nasal breathing (58.8%), nosebleeds (89.7%), feeling of a foreign body in the nose (35.8%), impaired sense of smell (27.2%).

In plasma of venous blood in patients with vascular tumors of the nose, markers of endogenous intoxication were determined - molecules of average mass at a wavelength of 254 and 280 according to the method of N.I. Gabrielyan (1985) [3,5,6]. Malonic dialdehyde (MDA) was determined by the method of S.G. Konyukhova (1995) [2,5,7,18]. The activity of the antioxidant enzyme catalase (CA) was determined by the method of M.A. Korolyuk et al. [6,10,19].

The MDA/CA coefficient was calculated, which indicates a shift in lipid peroxidation to the prooxidant or antioxidant side, and  $MCM_{280}/MCM_{254}$ , the protein stability coefficient (PSC), a decrease in which indicates the transformation of the protein into a more degraded form.

**Results.** Vascular tumors of PN and SNP lead to certain manifestations of endogenous intoxication associated with LPO processes, which are detected not only clinically, but also by laboratory parameters [8,16,17,25].

A special place in the development of endogenous intoxication is occupied by lipid peroxidation reactions that occur continuously in the body and intensify during endogenous intoxication. In some cases, these reactions become a trigger for endotoxicosis. Products of lipid peroxidation have toxic properties. Free radicals attack various components of cells, including plasma membrane lipids containing unsaturated fatty acids. Continuously with the synthesis of products of lipid peroxidation, their decomposition occurs. In the development of endotoxicosis, an increase in the intensity of lipid peroxidation with the accumulation of its primary and secondary products, which have a damaging effect on the cells and tissues of the body, under conditions of inhibition of the antioxidant system of the body, is essential [18,19]. Among the biochemical methods for assessing endogenous intoxication, MMM (medium mass molecules) with high biological activity with a molecular weight of 300 to 5000 D are widely used. MM molecules belong to the class of medium molecular weight products of proteolysis. By its chemical nature, MMM consists of the following components: peptides, residual nitrogen, glycopeptides, polyamines, amino sugars, polyhydric alcohols, lipid peroxidation products, and others. In healthy cells of the body, a small amount of low- and medium-

<https://cejsr.academicjournal.io>

molecular substances is constantly formed. Their concentration significantly increases by 1.5–2 times in pathological conditions compared with normal values [20,22,25]. Close in structure to regulatory peptides, they affect the vital activity of all organs and organ systems. MM molecules, blocking phagocytic activity and oxygen-dependent mechanisms of microbicidal and cytotoxicity of leukocytes, fibroblast proliferation, can cause secondary immunodeficiency, can block receptors of any cell, thereby disrupting its metabolic processes and functions.

In the plasma of healthy people under physiological conditions, MMM peptides are present in limited amounts. Conventionally, two MMM funds are distinguished: the first MMM fund containing aromatic amino acids and having an absorption maximum at 280 nm; the second pool of MSM that do not contain aromatic amino acids and have an absorption maximum at 254 nm (nucleic acid fragments, oligoalcohol derivatives, and others).

To evaluate the LPO processes, we used the content of malondialdehyde (MDA), catalase activity, average mass molecules (MMM) at 254 and 280 nm, as well as the ratios of MDA/CA and  $MMM_{254}/MMM_{280}$ . The results obtained characterizing endogenous intoxication in patients with vascular tumors of PN and SNP are shown in Table 1

**Table 1 Indicators of endogenous intoxication in patients with benign vascular tumors of PN and SNP at admission**

Indicators	Control, n =10	Upon enrolment, n = 31
MDA, $\mu\text{mol/l}$	3,50±0,22	5,56±0,28, P<0,001
CA, mkat/sec l	0,90±0,07	0,38±0.03, P<0,001
MMM <sub>254</sub> , c.u.	0,24±0,04	0,56±0,04, P<0,001
MMM <sub>280</sub> , c.u.	0,28±0,02	0,61±0,041, P<0,001
PSC, c.u.	1,16±0,08	0,82±0,084, P<0,001
MDA/CA, c.u.	3,88±0,17	25,43±1,38, P<0,001

Based on the results of biochemical studies, it was revealed that the content of the secondary product of LPO - MDA increased by 158.8%, along with this, a decrease in the activity of catalase (CA), one of the key enzymes of antioxidant protection, by 42.2% was noted.

**Discussion.** When conducting a comparative analysis of the indicators of I and control groups, it was found that the ratio of MDA/CA increased by 6 times, and this, in turn, indicated a significant activation of free radical oxidation in patients with vascular tumors of PN and SNP. Also, MMM accumulated in the blood plasma, that is, the concentration of  $MMM_{254}$  increased by 112.5% and  $MMM_{280}$  - by 60.7% relative to the control values. At the same time, the coefficient of protein stability (PSC) was 75.9% of the indicator of the control group.

The results of biochemical studies indicate that vascular tumors of PN and SNP contribute to the development of endogenous intoxication, which in this disease is multifactorial in nature - against the background of activation of free radical oxidation, hydrophilic markers of endotoxiosis - molecules of average mass - accumulate in the plasma.

The data obtained can be used as additional criteria in the diagnosis of patients with sinusitis in benign neoplasms of the nose and paranasal sinuses. In addition, the above facts should be used in the development of a scientifically based method of treating patients.

Thus, the condition of patients with vascular tumors of PN and SNP is characterized by headache, nasal discharge, impaired breathing and smell, nosebleeds, feeling of a foreign body in the nose, general intoxication of the body, with severe endogenous intoxication, that is, with an increase in MDA,  $MMM_{254}$ ,  $MMM_{280}$ , MDA/CA and a decrease in catalase and PSC activity.

Therefore, therapeutic measures should be aimed at improving symptoms and removing endogenous

<https://cejssr.academicjournal.io>

intoxication [10,11,12,16].

Given the above, depending on the method of treatment, the patients were divided into 2 subgroups:

I– those who received TL (15 patients);

II – received polyoxidonium against the background of TL (16 patients).

LT included: surgical removal of the neoplasm, antibacterial, anti-inflammatory and hyposensitizing, symptomatic therapy.

The choice of the method of anesthesia and surgical intervention depended on the spread of the tumor, in all patients the neoplasm was removed endonasally, 10 (66.6%) patients preferred local anesthesia, in 5 (33.4%) - under general anesthesia.

In the postoperative period, antibiotic therapy was carried out taking into account the antibiogram.

Along with clinical indicators, we studied the state of parameters of endotoxemia, the results of which after traditional treatment are presented in Table 2.

**Table 2 Indicators of endogenous intoxication in patients of group I who received traditional therapy**

Indicators	Norm n=10	Before treatment n=31	After treatment n=15
MDA, $\mu\text{mol/l}$	3,50±0,22	6,56±0,28, P<0,001	4,72±0,32, P<0,05
CA, mkat/sec l	0,90±0,07	0,28±0,03, P<0,001	0,30±0,02, P<0,001
MMM <sub>254</sub> , c.u.	0,24±0,04	0,51±0,04, P<0,001	0,44±0,03, P<0,001
MMM <sub>280</sub> , c.u.	0,28±0,02	0,451±0,04, P<0,001	0,40±0,03, P<0,001
PSC, c.u.	1,16±0,08	0,88±0,084, P<0,001	0,91±0,08, P<0,05
MDA/CA, c.u.	3,88±0,17	23,43±1,38, P<0,001	15,73±0,72, P<0,001

Note: \* - significance P<0.05, \*\* - significance P<0.01, \*\*\* - significance P<0.001 in comparison with the control group

As can be seen from the data in the table, after traditional treatment, the content of MDA decreased by 28.04% relative to the index at admission, although it exceeded the norm by 32.5%. Against this background, catalase activity increased only by 7.14% and amounted to 33.3% of the control value. The MDA/CA ratio decreased by 32.86%, remaining 4.04 times higher than the norm.

TL contributed to a slight correction of the hydrophilic component of endotoxemia, that is, the concentration of MMM<sub>254</sub> decreased by 13.7% relative to the figure before treatment, although it exceeded the norm by 83.3%; the level of MMM<sub>280</sub> decreased by only 11.1%, exceeding the control value by 42.8%. At the same time, the PSC exceeded the value before treatment by 3.4%, amounting to 78.4% of the standard value.

Recurrent neoplasms of NC in group I were observed in 3 (20%) patients.

Thus, TL contributed to a slight correction of the studied parameters, that is, the intensity of LPO processes and the content of MMM decreased unreliably.

Insufficient effectiveness of traditional therapy in the treatment of benign vascular tumors of the nose encourages the search for other approaches in the treatment of this pathology. For this purpose, polyoxidonium, an immunomodulator of synthetic origin, was included in the treatment of patients in group II [13,14,15,16,17].

The drug was prescribed in the postoperative period against the background of LT, 3-6 mg intramuscularly 1 time per day for 5 days (before administration, the lyophilisate was diluted in 2 ml of 0.9% sodium chloride). Subsequently, at the same dosage once a week for 5 weeks. In this group,

<https://cejsr.academicjournal.io>

12 (75%) patients were operated on for neoplasms under local anesthesia, and 4 (25%) - under general anesthesia. Also, the amount of intraoperative bleeding decreased.

In group II patients who received polyoxidonium against the background of LT, the postoperative period was satisfactory, there was also rapid wound healing, slight crusting, the nasal cavity self-cleaned much faster, and this, in addition to a quick recovery, made the recovery period less traumatic.

After treatment, difficulty in nasal breathing was noted in 1 (6.2%) patient and impaired sense of smell in 1 (6.2%) patient, which indicated a significant change in most clinical indicators.

Polyoxidonium, against the background of traditional treatment of vascular tumors of the nose, inhibited the LPO reactions to a greater extent and reduced the concentration of hydrophilic components of endotoxemia in blood plasma to control values (Table 3).

Under the influence of polyoxidonium, the content of MDA decreased by 42.6%, while its value did not differ significantly from the value after the use of IRS-19 ( $P > 0.05$ ) and amounted to 79.6% of the value with standard treatment ( $P < 0.05$ ). Plasma catalase activity against the background of polyoxidonium increased by 60.0%, that is, 173.3 and 70.8 higher than after conventional therapy and IRS-19.

**Table 3 Indicators of endogenous intoxication in patients of group II**

Indicators	Control n =10	Before treatment n=31	After treatment n=16
MDA, $\mu\text{mol/l}$	3,50 $\pm$ 0,22	6,56 $\pm$ 0,28, $P < 0,001$	3,73 $\pm$ 0,12, $P < 0,1$
CA, mkat/sec l	0,90 $\pm$ 0,07	0,28 $\pm$ 0,03, $P < 0,001$	0,84 $\pm$ 0,1, $P < 0,001$
MMM <sub>254</sub> , c.u.	0,24 $\pm$ 0,04	0,51 $\pm$ 0,04, $P < 0,001$	0,27 $\pm$ 0,02, $P < 0,05$
MMM <sub>280</sub> , c.u.	0,28 $\pm$ 0,02	0,451 $\pm$ 0,041, $P < 0,001$	0,29 $\pm$ 0,02, $P < 0,1$
PSC, c.u.	1,16 $\pm$ 0,08	0,88 $\pm$ 0,084, $P < 0,001$	1,08 $\pm$ 0,07, $P < 0,1$
MDA/CA, c.u.	3,88 $\pm$ 0,17	23,43 $\pm$ 1,38, $P < 0,001$	4,19 $\pm$ 0,20, $P < 0,1$

Note: \*- $P < 0.05$ , \*\*- $P < 0.001$  significance of differences relative to the control group

A significant antioxidant effect of the drug was indicated by a decrease in the MDA/CA ratio by 80.4%, which was significantly more than after the traditional and IRS-19. Polyoxidonium reduced the concentration of MMM<sub>254</sub> and MMM<sub>280</sub> by 45.0 and 35.5%, respectively, which significantly brought them closer to the values of the healthy group.

Neoplasm recurrence was observed in 1 (6.3%) patient.

**Conclusion.** Due to the presence of detoxifying, antioxidant and membrane-stabilizing activity, polyoxidonium enhanced the effect of traditional treatment, which was manifested in faster healing of surgical wounds, the disappearance of intoxication, the maximum approximation of endogenous intoxication indicators to the control ones, a decrease in intraoperative bleeding and the number of relapses. Thus, the inclusion of polyoxidonium in the complex of therapeutic measures in the treatment of patients with vascular tumors of the nose gave positive results and can be recommended for use in practical otorhinolaryngology.

### Bibliography

1. Arifov S.S. (1995). Endogenous intoxication and otorhinolaryngology. Proceedings of the international conference: Actual problems of otorhinolaryngology. Uzbekistan, Tashkent, 18-20.
2. Afanas'eva A.N. (2004). Comparative assessment of the level of endogenous intoxication in persons of different age groups. Clinical laboratory diagnostics No. 6. 11-13.

<https://cejsr.academicjournal.io>

3. Bobrov V.M., Shishkin A. (1999). A medium-weight molecule is an indicator of intoxication in purulent-inflammatory diseases of the upper respiratory tract. Journal: Bulletin of otorhinolaryngology. No. 1. 33-34.
4. Vasiliev V.V. (2012). Pathological mechanisms of progression of endogenous intoxication in the early postoperative period: abstract of the dissertation of a candidate of medical sciences. Moscow,. 20-25.
5. Vladyka A.S., Levitsky E.R., Poddubnaya L.E., Gabrielyan E.I. (1987). Medium molecules and problems of endogenous intoxication in critical conditions of various etiologies. Anesthesiology and resuscitation. No. 2. 37-42.
6. Gabrielyan N.I., Levitsky E.R., Dmitriev A.A. other. (1985). Screening method for the determination of medium molecules in biological fluids. Method. recommendations. Moscow. 17-20.
7. Karabaev Kh.E., Antoniv V.F. other. (1997). Indicators of blood lipid peroxidation with purulent-inflammatory diseases of the nose and paranasal sinuses. Journal: Bulletin of Otorhinolaryngology. No. 4. 44-47.
8. Karyakina E.V., Belova S.V. (2004). Molecules of average mass as an integral indicator of metabolic disorders (literature review). Clinical laboratory diagnostics. No. 3. 3-8.
9. Kozhevnikov V.A., Bauer T.V., Kozhevnikov E.V. (1999). Clinic and treatment of hemangiomas in children. Selected issues of oncology: Proceedings of the international scientific-practical conference, Barnaul. 258-260.
10. Kravchenya S.S. (2005). Optimization of diagnosis and drug correction of immunological disorders associated with endogenous intoxication in patients with psoriasis: dissertation of a candidate of medical sciences. Saratov,. 228-230.
11. Lutfullaev G.U., Lutfullaev U.L., Nematov U.S., Safarova N.I. (2020). Case report: hemangioma of the nasal cavity in a pregnant woman. Scientific and practical journal "Bulletin of science and education" 10 (88). Moscow. 89-93.
12. Lutfullaev G.U., Lutfullaev U.L., Safarova N.I. (2015). Hemostatic provision of surgical treatment of juvenile angiofibromas of the nasopharynx. Dentistry. Tashkent, 3 (4). 161-163.
13. Lutfullaev G.U., Lutfullaev U.L., Safarova N.I. (2020). The role of immunomodulators in the treatment of sinusitis in benign neoplasms of the nose and paranasal sinuses. Scientific and practical journal "Bulletin of science and education", 10 (88). Moscow. 85-89.
14. Lutfullaev G.U., Safarova N.I. (2020). Polyoxidonium in the treatment of papillomas of the nose and paranasal sinuses. Scientific and methodological journal: Achievements of science and education, Ivanovo, 1 (55), 40-43.
15. Lutfullaev U.L., Safarova N.I. (2020). Optimization of the treatment of sinusitis in benign neoplasms of the nose and paranasal sinuses. Russian journal "Head and Neck" collection of abstracts of the VIII international interdisciplinary congress on diseases of the head and neck organs application. Moscow, 2 (8). 21-23.
16. Lutfullaev U.L., Lutfullaev G.U., Safarova N.I. (2017). Methods for the diagnosis and treatment of hemangiomas of the nasal cavity and paranasal sinuses. International scientific journal: Problems of biology and medicine. Uzbekistan, Samarkand, 2 (94). 196-197.
17. Lutfullaev U.L., Safarova N.I. (2012). Our experience in the treatment of nasopharyngeal papilloma. Journal: Problems of biology and medicine. Samarkand, No. 4. 35-37.

<https://cejsr.academicjournal.io>

18. Malakhova M.Ya. (1995). Method of registration of endogenous intoxication: Methods. recommendations. 33-37.
19. Merkushkina I.V. (2009). Correction of metabolic disorders of the brain in endotoxicosis: abstract of the dissertation of a doctor of medical sciences. Saransk,. 39-42.
20. Nachkina E.I. (2011). Systemic cytotoxic lesions in endotoxicosis and their correction with drugs of a metabolic type of action: abstract of the dissertation of a doctor of medical sciences. Saransk, 42-48.
21. Pashina E.V., Zolotavina M.L. (2014). Albumin in the evaluation of endogenous intoxication. Journal: Science and Modernity. Russia, No. 33. 23-28.
22. Pashina E.V., Zolotavina M.L. (2019). A complex of biochemical indicators in assessing the formation of stages of endogenous intoxication in the cell. Electronic scientific journal: Modern problems of science and education. 6. <http://www.science-education.ru/ru/article/view?id=29437>
23. Safarova N.I., Karabaev Kh.E. (2010). Polyoxidonium in the treatment of sinusitis in benign tumors of the nose and paranasal sinuses. Journal: Dentistry. Tashkent, 3 (4). 154-155.
24. Safarova N.I., Lutfullaev U.L., Muhammadiev N.K. (2010). Evaluation of the effectiveness of polyoxidonium in the treatment of patients with sinusitis with benign neoplasms of the nose and paranasal sinuses. Journal: Actual problems of the humanities and natural sciences. Moscow, No. 11. 370-374.
25. Khamidov A.K., Rasulov S.R., Muradov A.M., Khamidov J.B. (2016). Malignant neoplasms and syndrome of endogenous intoxication. Electronic journal: Bulletin of postgraduate education in health care. Republic of Tajikistan, Dushanbe, (3), <http://www.vestnik-ipovszrt.tj/?p=2437>