

The Use of Lagoden in Operative Interventions for Nasopharyngeal Angiofibroma

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Abstract This article presents comparative analysis of the results of the use of Lagoden in 12 patients with group of patients without receiving Lagoden in nasopharyngeal angiofibroma (NA) who admitted to the department of head and neck surgery. **Aim of research** - to evaluate efficacy of hemostatic effect of Lagoden in the nasopharyngeal angiofibroma. **Materials and methods of research** - we studied efficacy of agent Lagoden in 12 patients with NA treated during period 2011-2014. For comparison and control there was used retrospective analysis of the data from 13 patients with NA admitted for period 2008-2011 with traditional methods of stopping of postoperative hemorrhage without use of Lagoden. **Conclusions** - on the basis of results obtained it may be concluded that Lagoden has evidently confirmed indication for use in juvenile nasopharyngeal angiofibroma in the otorhinolaryngological practice.

Keywords Nasopharyngeal angiofibroma, Therapy, Lagoden, Surgery

1. Background

The juvenile nasopharyngeal angiofibroma (NA) is a rare disease, accounted only 0.05%. This pathology is mainly observed in young men between the ages of 9 to 28 years old. Prognosis of disease depends on tumor expansion timely and quality of treatment. According to the foreign statistical data the lethality due to this disease accounted 2% in operative intervention in the second half of XX century [7, 13]. The risk of lethality increases because of difficult removal of the fibrous base tumor, tightly adhering with periosteum (recurrent occurrences) and the intensive with difficulties stopping intraoperative bleedings [9, 11, 14].

At present time in the surgical practice the hemostatic agents should be met to special requirements:

- to induce in the minimum period of time (to 120 seconds) complete stopping of capillary bleeding;
- to have high adhesiveness, to adhere closely to the wound surface and to prevent recurrence of the bleeding;
- not to effect on the function of hemostasis in the common blood flow;
- to be comfortable to use [1, 4].

Collagen is one of the main structural proteins of organism, occupies the special place among the natural polymers having blood stopping abilities. It is known that collagenous fibres induce active thrombocyte adhesion and aggregation

[2, 3, 15].

The first hemostatic preparation Aviten was obtained in form of microcrystalline powder, nonwoven material (Superstat), collagen sponge Collastat [16].

Currently, the most efficient hemostatic known imported drug agent Tachocomb (Nycomed, Austria) on the basis of collagen and fibrin glue. Clinical studies have confirmed its high hemostatic activity at various capillary hemorrhage [4, 5].

The plants of family Lagochilus have been known by their therapeutic effects and have been included into the medicinal plants of the Orient as valuable hemostatic agents. They are distributed mainly in Samarkand, Jizzakh and Navoiy provinces of Uzbekistan and in some other republics of the Central Asia. The chemical investigations of lagochilus began by G.V. Lazurevsky and A.C. Sadikov. In the problem laboratory of the chemistry of natural compounds there has been developed medicine for intravenous injections "Lagoden", synthesized from the diterpenoid lacton lagochirsine isolated from lagochilus L.

In the works of I.E. Akopova indicated that the drug increases the ability of the blood coagulation by activation of both plasma and cellular blood clotting factors, and due to depression anticoagulation system, also has a depressing effect on the fibrinolytic activity of plasma [1].

According to the results of investigation published in journal "Klinicheskaya medicina", the use of Lagoden accelerates the process of hemorrhage resorption in the tunics of the eye, improves the tissue structures of the eye [6, 10, 12].

Today the traditional methods of the stopping of hemorrhage with use of hemostatics seems to be

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Published online at <http://journal.sapub.org/otolaryn>

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insufficiently effective and various complications frequently occur. This problem leads to the need to find more effective drugs that enable significantly reduce the rate of severe complications.

Lagoden (sodium trihydroxiepoxiladanat) appeared to be one of such preparations using for prevention and stopping of hemorrhages of various genesis [3, 8, 12].

The medicine Lagoden has been adopted for clinical use by Pharmacological Committee of the Republic of Uzbekistan (registration Certificate N 01/195/1 of 08.05.2001) and by Order of the Ministry of Health of the Republic of Uzbekistan N 195 of 08.052001.

Because of above-presented data, according to our initiative, for the first time Lagoden was used in the medical practice in the Department of tumors of the neck and head of Tashkent Oncological Dispensary in Uzbekistan and other countries with purpose of reduction and stopping of internal and post-operative hemorrhage in nasopharyngeal angiofibroma.

2. Purpose of Research

To evaluate efficacy of hemostatic effect of Lagoden in the nasopharyngeal angiofibroma.

3. Tasks of Research

- Comparative analysis of blood preserving effect of Lagoden in nasopharyngeal angiofibroma between studied and control groups;
- Volume of the loss of blood after Lagoden injection;
- Hemostasiogram.

4. Materials and Methods of Research

We studied efficacy of agent Lagoden in 12 patients with NA admitted to the Department of tumors of neck and head of Tashkent Oncological Dispensary during the period 2011-2014. For comparison and control there was used retrospective analysis of the data from 13 patients with NA admitted to the Department of tumors of head an neck of the Republican Oncological Research Center of the Republic of Uzbekistan for period 2008-2011 with traditional methods of stopping of postoperative hemorrhage without use of Lagoden. The patients were males aged between 10 and 22. Nasopharyngeal angiofibroma is met more frequently at the age from 16 to 20. Hemostasiogram was made in control and studied group before and after operation, blood was taken from elbow vein into plastic or silicate test-tube containing 8.8% solution of citric sodium 3-times-mixed (sodium citrate), the ratio of blood volume and sodium citrate. The blood was centrifuged in 3000-4000 terms/min (1200 g) during 15 min. As a result the thrombocyte poor plasma was obtained which was transferred into another test-tube, where it is stored to performance of investigation.

Lagoden was injected intravenously in dose 0.05 g-10 ml 10 min before surgery. During studying we used traditional methods of diagnosis: general blood analysis, control of the volume of blood loss and parameters of coagulogram. Standard therapy included administration of sodium ethamzilate 250 mg every 8 hours, fresh frozen plasma (FFP), erythrocytary mass according to the indications.

Statistic processing of data was performed with use of packet of application software "STATISTICA 8.0". Statistically valuable are differences in $p < 0.05$.

Table 1. Comparative analysis of the findings of hemostasiogram in the studied groups (M±m)

| Groups | Thrombocyte aggregation (sec.) | Prothrombin time (sec - %) | | INR (international normalizing ratio) | Thrombin time (sec) | Fibrinogen "A" (m/l) | APTT (sec) activated partial thromboplastin time | SFMC (m/l) soluble fibrin monomer complex |
|---|--------------------------------|----------------------------|---------------|---------------------------------------|---------------------|----------------------|--|---|
| Control group before the surgery | 14,24±0,36 | 20,88±0,20 | 77,11% ±1,01% | 1,29±0,01 | 17,11±0,11 | 2664,44±135,53 | 55±0,52 | 6,77±0,86 |
| Studied (main) group before the surgery | 15±0,77 | 27±0,92 | 65% ±1,89% | 1,56±0,05 | 16,66±1,10 | 2368±145,70 | 42,66±1,19 | 7±0,58 |
| Control group after the surgery | 17,12±0,36 | 18,52±0,20 | 84,25±0,01 | 1,15±0,11 | 17±0,11 | 5244,75±135,53 | 48,62±1,19 | 18,62±0,54 |
| Studied group after the surgery | 15±0,73 | 21±1,07 | 58±2,63% | 1,35±0,06 | 13,33±0,77 | 3404±232,91 | 35±0,91 | 14±0,95 |
| P* | >0,05 | >0,05 | >0,05 | >0,05 | >0,05 | >0,05 | >0,05 | >0,05 |
| P** | >0,05 | >0,05 | >0,05 | <0,05 | <0,05 | <0,05 | <0,05 | >0,05 |

P* - Control group before surgery was compared with the studied group before operation.

P** - Control group after surgery was compared with the studied group after operation.

5. Results and Discussion

During performance of analysis of measures for hemorrhage stopping it should be noted that in group of Lagoden the patients were required for the performance of less complex operative interventions than in group of control. It is seen from the table that during comparative analysis between studied groups there was revealed reliable difference (Table 1, $p < 0.05$). Comparative analysis of the findings of the blood hemostasiogram in the studied groups during 24 hour after operation (Table 1) demonstrated positive effect of Lagoden application in the main group in comparison with control group.

The parameters of thrombocyte aggregation, prothrombin time and RFMK remained practically without significant difference. In all other parameters the reliable differences were determined in $**p < 0,05$.

Volume of the blood loss in the studied group was reliably lower and accounted for 200 ml, in comparison with 600 ml in control group. This evidence undoubtedly indicated about the hemostatic effect of Lagoden. The results of work in the comparative aspect in group of Lagoden showed that transfusion of the blood preparations was required only on the first day after surgery. There has been observed significant positive effect of Lagoden that was confirmed by absence of indicators for repeated blood transfusions on the third day in comparison with group of control.

6. Conclusions

On the basis of results obtained it may be concluded that Lagoden has evidently confirmed indication for use in juvenile nasopharyngeal angiofibroma in the otorhinolaryngological practice. The development of effective available medicinal forms, that is collagenic hemostatic biofilms on the basis of active substances from the domestic herbal raw material may not only replace expensive foreign preparations, but safely compete with them both on the internal and on the world market. All the above-presented data indicate about hemostatic effect of Lagoden in intra- and postoperative hemorrhages that corresponds to the data of the native and foreign literature [3, 9]. In cases of use of more rational and correct method of hemorrhage stopping with inclusion of high effective hemostatic agents Lagoden appeared to be preparation of choice.

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