Perspectives of the Study of Adaptive-Immune Reactions Spectrum after Different Treatment Technologies of Uterine Fibroids

E.V. Bashirov, M.L. Polina, N.I.Duglas

ABSTRACT

The study included women with uterine myoma after various treatment technologies (laparotomy and laparoscopic myomectomies, uterine artery embolization). The features of adaptive variability and immunoreactivity in the early and late postoperative period were under study.

These adaptive- immune profile features allow predicting the likelihood of complications and disease recurrence after breast-conserving various interventions depending on the availability of therapeutic measures.

Keywords: uterine myoma, conservative myomectomy, uterine artery embolization, adaptive response, immunoreactivity.

INTRODUCTION

Urgency of the problem of optimization approaches in the management of women with uterine myoma determined decrease in their quality of life, coupled with the symptoms of the disease, a combination of hyperplastic endometrial diseases , infertility , and postoperative complications urogynecological which result becomes a statement of annual demographic and economic losses of society [4,5,9 , 15].

Contrary to the appearance and the introduction of advanced endovideosurgical and endovascular treatment of uterine fibroids, the frequency of recurrence of the disease requires an analysis of the adequacy of the choice of intervention [7, 10, 11, 12].

Change radical approach - hysterectomy, often practiced in routine gynecological practice as well as due to late treatment of patients for medical help in symptomatic uterine myoma larger organ for treatment technology identified the need to revise the priority choice of access.

Modern contingent of women with uterine myoma much «younger», a quarter of them are infertile, others to be realized reproductive function [2, 3, 9]. That is why the problems of doing such a multifaceted group of patients are not only to eliminate the symptom of the disease and relapse prevention, but also in maintaining their child-bearing potential.

Obviously, improving the treatment of uterine fibroids technology requires not only to the effective conduct of conservative plastic operations with respect for reproductive functional

reserve, but also to minimize their negative effects on all body systems. However, these domestic and foreign literature about the immediate and long-term effects of interventions with uterine fibroids are ambiguous , the different priorities of choice - from the standpoint of the age of patients , localization of nodes , the presence of concomitant hyperplastic processes of the uterus, the technical skills of the surgeon [13,14].

Fears of complications of laparoscopic approach consequences - endoscopic scar ruptures during childbirth identified priority in favor laparotomic myomectomy competition which began to make uterine artery embolization (UAE) [8,14] . The data collected in the field of interventional radiology gynecological convince this method obviously alternative surgical interventions, especially - with the technical complexity of myomectomy or its accompanying unjustifiably high risk of trauma [7, 10, 15] .

However, the conclusions about the competitiveness of UAE with other interventions due to the almost complete disappearance or significant reduction of clinical symptoms in contrast with the data on the feasibility of its implementation in women interested in childbirth . [20]

It seems that the debate on the preferred technology for the treatment of disease, the risk of complications and recurrence of fibroids after various interventions on the absence of rehabilitation algorithm that undoubtedly affects on formation of the integral characteristics of the quality of life [2, 10, 17, 18].

There were attempts to study predictive adaptive responses significance for aggregate analysis of gynecological patients after laparotomic interventions from the pathophysiological positions [6]. Essentially, the methodology based on the principles of H. Selye (1960) about status and reactions of the whole organism, elaborated by L.H. Harkavy (1999) [1] on the variability of the body's response to stress, reduces the possibility of prenosological diagnosis of adjustment disorders.

At individual data on the nature of AR after realized surgery stress in gynecological patients the range of immunological disorders, measured using the ELI-P test, remains poorly studied.

It seems that an extensive analysis of complex adaptive variability organism of patients, depending on the chosen method of treatment of uterine fibroids (myomectomy, laparoscopic and laparotomy, uterine artery embolization) subject to the availability and scope of rehabilitation measures will form the evidence base the validity of such tactics.

In connection with this we set a goal: to assess the effectiveness of rehabilitation after various treatment technologies patients with uterine myoma (UM) based on analyzing the nature of adaptive responses and immunoreactivity.

MATERIAL AND METHODS

To achieve the objective a prospective study of 265 women with uterine fibroids, applied to the clinic for conservative myomectomy and UAE was done. Preoperative examination provided for pelvic sonography with Doppler, hysteroscopy, histological examination of scrapings of the endometrial, the treatment of chronic persistent inflammatory diseases of the genitals, if necessary, antibiotic therapy was performed.

Comprehensive rehabilitation after the intervention included the prevention of adhesion, growth of relapse fibroids, immunocorrection treatment of hormone-dependent diseases dishormonal bodies' recovery eubioz of genitals and women's reproductive function.

Contingent of women, depending on the technology of treatment of uterine fibroids and the presence of postoperative rehabilitation was divided into groups : I - laparotomic after myomectomy (LTM) ((n = 68) - after a comprehensive rehabilitation (CR), II - after the LTM and without CR (n = 16), III - after laparoscopic myomectomy (LPC) and CR (n = 82), IV - after LPC and remediation without (n = 12), V group - after UAE and CR (n = 76), VI group - after UAE without rehabilitation (n = 11).

Embolization was performed by the standard technique, with advanced angiographic study sonography nodes Doppler velocimetry; emboli were used as particles of polyvinyl alcohol (PVA) in size from 350 to 900 or hydrogel (AAA Company, Russia). UAE is made if there are contraindications to other organ-preserving treatment options or inefficiencies (hormone), nodes larger than 10 cm in diameter.

On postoperative phase evaluated the nature of adaptation reactions (AR) on the 7th day, and a month after the intervention, depending on the availability of the CD and in her absence on the basis of leukocyte count in the peripheral blood smear procedure LH Harkavy et al. (1990). Isolated types of adaptive responses: response training (RT), calm reaction activity (CRA), reaction increased activation (RIA), reaction to chronic stress (RCS).

To study the serum immunoreactivity, reflecting the number and affinity of some natural autoantibodies embryotropic interacting with proteins - regulators of embryogenesis method was applied " ELI-P - 1 Test » (ELISA-detected probably of pathology), based on a standard ELISA. Studies were performed one day after the various treatment technologies, month and 3 months.

Statistical processing of the results was performed using the statistical software package Statistica v.6.0. program and Microsoft Office Excel 2003.

To identify the significance of differences between the parameters of the random variables we used Student's test. The level of statistical significance adopted $p < 0.05$.

RESULTS AND DISCUSSION

Spectrum of AR in a month after the intervention showed a predominance of RCS is rehabilitation compared with those in groups where practiced introduction of therapeutic measures , regardless of the method effects on uterine tissue : twice as often in the LTM (68.8%) ($p < 0.05$) and LPC (41.7%) , four times at least - at the UAE (45.4%) ($p <0.05$) (Fig. 1) .

After CR RCS prevailed in LTM - a third - and a half times more frequently than in the LPC, three times - in UAE (10.5%).

Following rehabilitation measures identified in the dynamics of the increase in CRA in comparison with the results on the 7th day after the intervention : after LTM - from zero to 23.5% , LPC - from 19.5% to 34.1% , UAE - from 27.6 % to 42.1 %, whereas in the absence of CR - only 7.9 % of the women on average. Dominant PCA defined in UAE - almost five times more compared to the rate in the group without treatment complex (9.1%) ($p <0.05$). Month after various technologies treatment of uterine fibroids increased frequency RT just outside the Kyrgyz Republic, the highest rate was determined after LPC - a third of women (33.3%) , 1.2 times higher than after UAE (27.3%) , almost twice - after LTM (18.8%).

With the help of ELI-P test that evaluates the amount of embryotropic autoantibodies - integral marker systemic immunity, revealed the prevalence of abnormal immunoreactivity in all groups by day (average, 94.8 %) , regardless of the type of intervention , as a natural corollary to the operational stress vectoring in immunodeficient state (after the most significant LTM - 83.3%) (Fig. 2).

Predictions of improving the quality of life for a number of parameters analyzed scale was based on the statement of normoreactivity month after intervention with the implementation of the CR: LTM - at 22.0% , LPC - 59.7 % , UAE - 53.9 % of women.

Prognostically unfavorable in terms of UM relapse after intervention is believed to be abnormal immunoreactivity recorded in the absence of the CR. Hyporesponsiveness predominant in women after LTM (68.7 %) - in contrast to half of the figure , after the LFM (41.7 %), two times - after the UAE (36,4%) ($p <0,05$).

Hyperactive answer is therapeutic measures rarely recorded: one-third (33.3 %) after LPC, almost half (45.4%) who underwent UAE, and only 6.2% - after LTM (Fig. 3).

Adherence to treatment and health cures before and after treatment of MM determined predominance of normoreactivity in 56.8% of women on average , describing the mode of action on the tissue at the LPC and UAE as gentle ; in LTM - twice less , only 22 % ($p <0,05$). Hyperreactivity after KR met twice more after UAE than after LPC (27.6% and 14.6 %, respectively) ($p <0.05$).

Validity of optimization approaches in the treatment of women with MM and implementation of restorative course after various interventions, as is the importance of doing an adequate preoperative evaluation confirms dynamic immunoreactivity after 3 months.

In the absence of therapeutic measures was diagnosed with abnormal production of autoantibodies embryotropic: hyporesponsiveness in 75.0 % of women after LTM - 1.7 times more than the LPC and after embolization ($p < 0.05$), hyperreactivity - a third (34.8 % on average) after UAE and LPC and only 6.2% - after LTM (Fig. 4).

Normoreactivity in the absence of health course after various treatment technologies MM revealed less: 2.6 times - after LTM (18.7%), 4.3 times - after LPC (16.7%) and the UAE (18.2%) ($p < 0.05$).

Reduced quality of life in patients with uterine myoma conditioned the negative symptoms, reflected on the parameters associated with physical activity, pain, psychological health, most are concerned with women metrorrhagia. Regression of symptoms after 6 and 12 months after various treatment technologies until the normalization condition, with the most dynamic quality of life after UAE LPC and testified about the effectiveness of therapeutic interventions and pathogenetic validity reductive repetition rate in the postoperative period.

CONCLUSIONS

These results suggest that post-operative evaluation of neurohumoral reactivity with testing for ELI-P-test and adaptation profile and subsequent correction of diagnosed disorders allows to predict the optimal recovery of functions of the reproductive system to the achievement of "comfortable" quality of life. It is found that the positive changes in the state of women after various treatment technologies for uterine myoma is accompanied by a shift of stress in Antistress reactions, negative - in adverse, most pronounced in the aggressive influence on uterine tissue. This confirms the priority of UAE and LSM by less traumatic influence compared with LTM. Type of immunoreactivity in conjunction with AR is not only a predictor of complications during the postoperative period, long-term recurrence of the disease, but also to measure the usefulness of ongoing rehabilitation course.

REFERENCES

1. Garkavi L.H., Kvakina E.B., Kuz'menko T.S. Antistressorniye reaksii I aktivatsionnaya terapiya: Reaksiya kak put’ k zdoroviu cherez prosessi samoorganizasii [Antistress reaction and activation therapy Reaction activation as a way to health through self-organization processes] Moscow: Imedis, 1999, p.655.

2. Gurieva V.A. Mesto embolizasii matochnich arteriy v terapii miomi matki [Place of uterine artery embolization in the treatment of uterine fibroids] Rossiyskiy vestnik akusherstva I ginekologii [Russian herald of Obstetrics and Gynecology] 2008, № 2, pp. 40 - 44.

3. Davydov A.I. Vosstanovitelnoe lecheniye posle organosberegayushich operasiy u bolnich podslizistoy miomoi matki I adenomiozom [Rehabilitation treatment after surgery in patients with organ- submucosalmyoma and adenomyosis] Voprosi ginekologii, akusherstva I perinatologii [Questions gynecology, obstetrics and perinatology] 2011, № 10 (6), pp.13 -21.

4. A.N. Strizhakov, A.I. Davydov, S.A. Kondrashin and others. Diskussionniye aspeckti embolizasii matochnich artriy pri lechenii bolnich miomoi matki [Controversial aspects of uterine artery embolization in the treatment of patients with uterine myoma] Voprosi ginekologii, akusherstva I perinatologii [Questions gynecology, obstetrics and perinatology] 2004, T. 3, № 5, pp. 72-76.

5. A.N. Strizhakov, A.I. Davydov, V.M. Pashkov Dobrokachestvenniye zabvolevaniya matki [Benign disease of the uterus] Moscow: GEOTAR - Media, 2011, p - 28.

6. Dolgov G.V. Gnoino-vospalitelniye oslojneniya v operativnoi ginekologii. Prognozirovaniye. Profilaktika: [Pyo- inflammatory complications in operative gynecology. Prediction. Prevention: Proc. allowance for higher honey. Textbook. Institutions] St. Petersburg: ELBI-SPb, 2001, pp.172

7. V.G. Breusenko, I.A. Krasnov, S.A.Kapranov, etc. Nekotoriye diskusionniye voprosi embolizasii matochnich arterii pri lechenii miomi matki [Some controversial issues of uterine artery embolization in the treatment of uterine fibroids] Akusherstvo I ginekologiya [Obstetrics and Gynecology] , 2006, pp. 23-26.

8. A.N. Strizhakov, P.V. Budanov, A.I. Davydov and others. Spontanniy razriv matki v rodah posle laparoskopicheskoi miomektomii [Spontaneous rupture of the uterus during childbirth after laparoscopic myomectomy] Voprosi ginekologii, akusherstva I perinatologii [Questions gynecology , obstetrics and perinatology, 2012, № 5, pp. 79-82.

9. A.L. Tikhomirov, A.A. Ledenkova, A.E. Bataeva. Patogeneticheskoe obosnovaniye profilactiki miomi matki [Pathogenetic substantiation prevention of uterine fibroids] Voprosi ginekologii, akusherstva I perinatologii [Questions gynecology, obstetrics and perinatology], 2011, Vol.10, № 1, pp. 75-78.

10. G.M.Saveliev, V.G.Breusenko, S.A.Kapranov et al. Embolizasiya matochnih arteriy v lechenii miomi matki: dostijeniya I perspectivy [Uterine artery embolization in the treatment of uterine fibroids: achievements and prospects] Akusherstvo I ginekologiya [Obstetrics and Gynecology], 2007, № 5, pp. 54 -59.

11. Agdi M., Tulandi T. Endoscopic management of uterine fibroids // Best Pract Res Clin Obstet Gynaecol. – 2008. – V.22. – N 4. – P.707-16.

12. Bhardwaj R. Uterine artery embolisation. Indian Heart J // 2012. – V.64. – N 3. – P.305-8.

13. Bradley L.D. Uterine fibroid embolization: a viable alternative to hysterectomy // Am J Obstet Gynecol. 2009. – V.201. – N 2. – P.127-35.

14. Bulman J.C., Ascher S.M, Spies J.B. Current concepts in uterine fibroid embolization // Radiographics. – 2012. – V.32. – N 6. – P.1735-50.

15. Gupta J.K., Sinha A., Lumsden M.A., Hickey M. Uterine artery embolization for symptomatic uterine fibroids // Cochrane Database Syst Rev. – 2012. – V.16. – N 5. - CD005073.

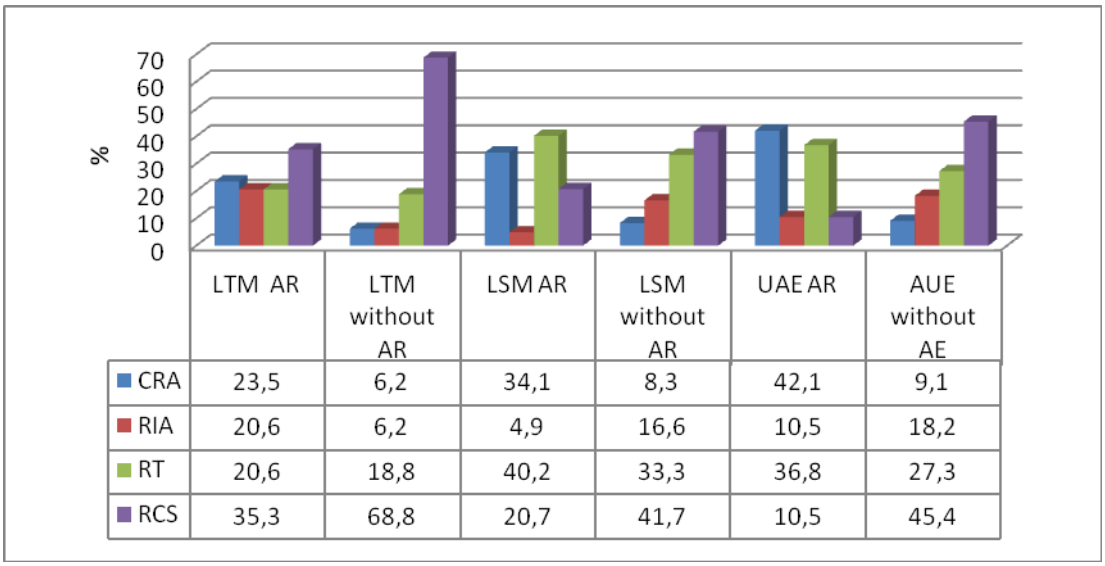
16. Kahn V., Fohlen A., Pelage J.P. Role of embolization in the management of uterine fibroids // J Gynecol Obstet Biol Reprod (Paris). – 2011. - V.40. – N 8. – P.918-27.

17. Kasum M. Fertility following myomectomy // Acta Clin Croat. – 2009. - V. 48. – N 2. – P.137-43.

18. Levy B.S. Modern management of uterine fibroids // Acta Obstet Gynecol Scand. – 2008. – V.87. – N 8. – P. 812-23.

19. Parker W.H. Laparoscopic myomectomy and abdominal myomectomy // Clin Obstet Gynecol. - 2006. – V. 49. – N 4. – P.789-97.

20. Van der Kooij S.M., Ankum W.M., Hehenkamp W.J. Review of nonsurgical/minimally invasive treatments for uterine fibroids // Curr Opin Obstet Gynecol. – 2012. – V.24. – N 6. – P. 368-75.



	LTM AR	LTM without AR	LSM AR	LSM without AR	UAE AR	AUE without AE
CRA	23,5	6,2	34,1	8,3	42,1	9,1
RIA	20,6	6,2	4,9	16,6	10,5	18,2
RT	20,6	18,8	40,2	33,3	36,8	27,3
RCS	35,3	68,8	20,7	41,7	10,5	45,4

Fig. 1. Adaptation Character Profile month after various treatment technologies for uterine uterus depending on the presence/absence of rehabilitation therapy

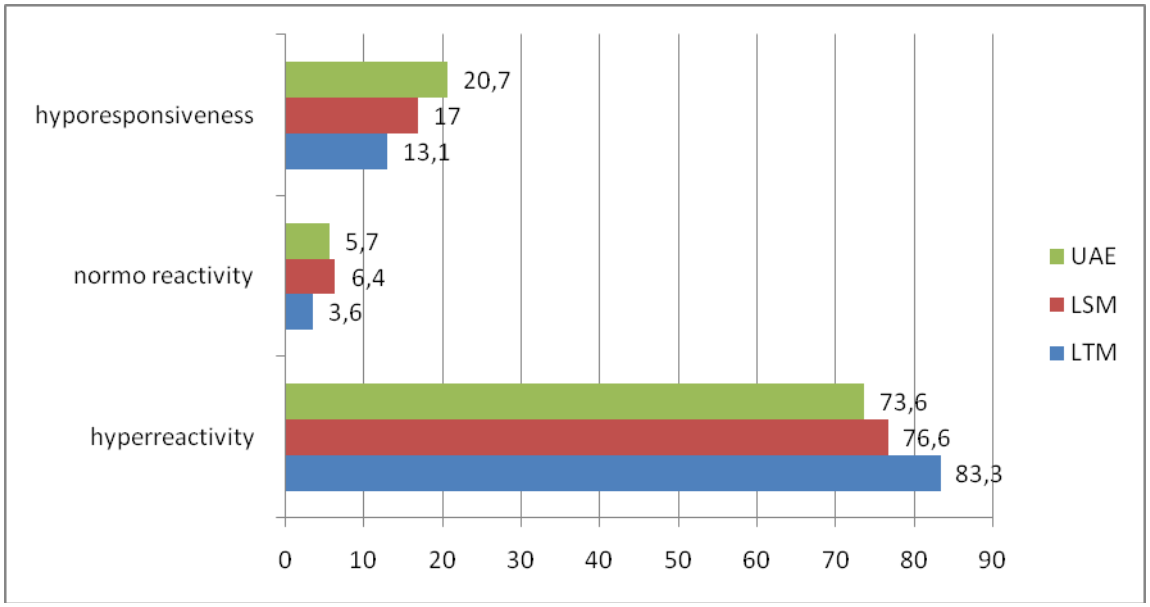
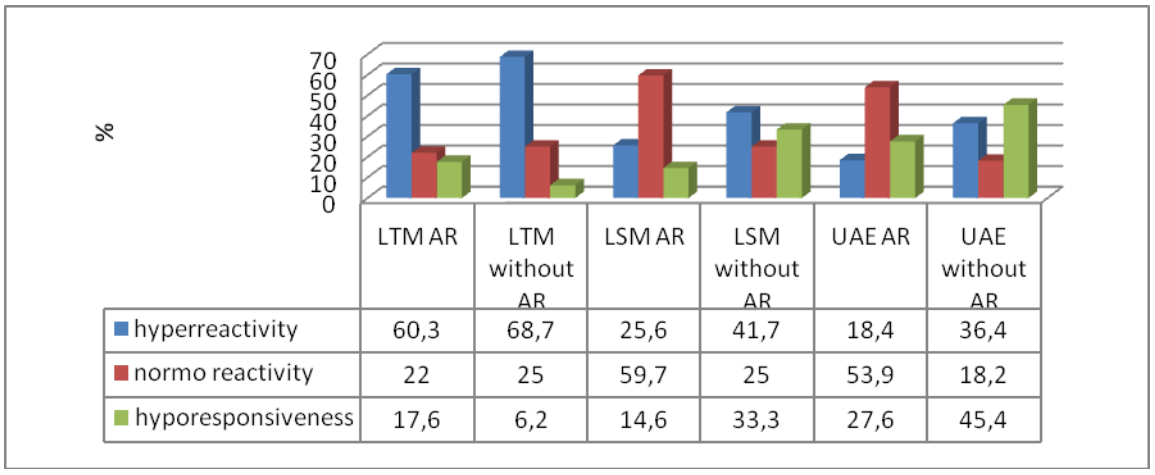
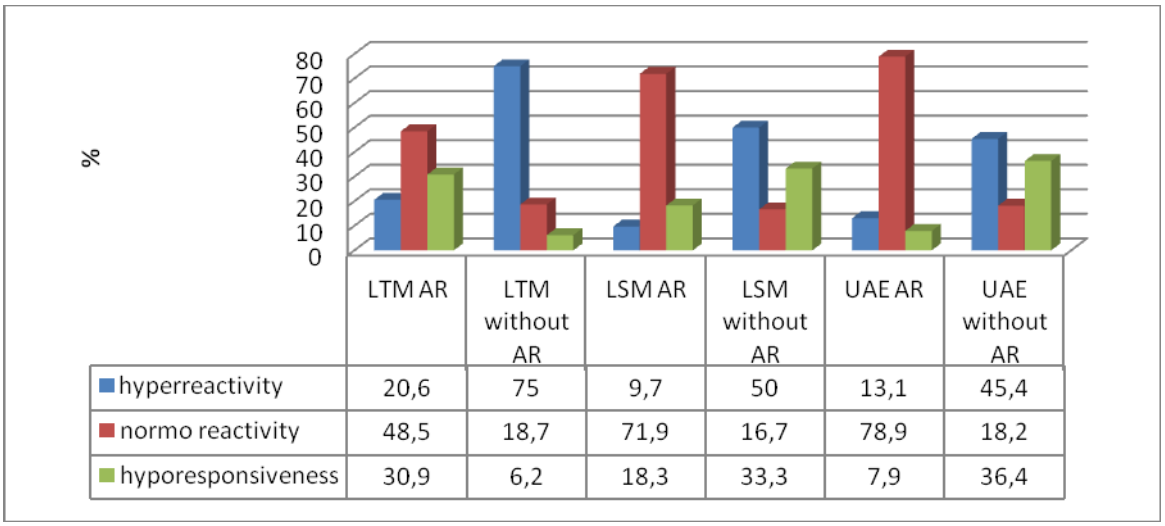


Fig. 2. Types of immunoreactivity day after surgery.



	LTM AR	LTM without AR	LSM AR	LSM without AR	UAE AR	UAE without AR
hyperreactivity	60,3	68,7	25,6	41,7	18,4	36,4
normo reactivity	22	25	59,7	25	53,9	18,2
hyporesponsiveness	17,6	6,2	14,6	33,3	27,6	45,4

Fig. 3. Option of immunoreactivity month after various treatment technologies uterine myoma, depending on the presence/absence of rehabilitation therapy



	LTM AR	LTM without AR	LSM AR	LSM without AR	UAE AR	UAE without AR
hyperreactivity	20,6	75	9,7	50	13,1	45,4
normo reactivity	48,5	18,7	71,9	16,7	78,9	18,2
hyporesponsiveness	30,9	6,2	18,3	33,3	7,9	36,4

Fig. 4. Option of immunoreactivity after 3 months of treatment with different technologies uterine fibroids depending on the presence / absence of rehabilitation therapy

Authors:

Bashirov Eduard Vladimirovich - obstetrician-gynecologist, MD, Obstetric-Gynecologic Clinic Kuban State University of the Ministry of Health of the Russian Federation, Russia, 350072, Krasnodar, ul. Zipovskaya 4/1; tel. 8 (988) 2425536, Fax: 8 (861) 2570509, E-mail: edikbashirov@rambler.ru;

Polina Miroslava Leonidovna - obstetrician-gynecologist, assistant professor of obstetrics, gynecology and reproductive medicine VPO Russian Peoples Friendship University, Russia, 117198, Moscow, Miklukho-Maklay St.,21, box. 3; tel. 8 (926) 6140549, E-mail: polina.ml@mail.ru;

Duglas Natalia Ivanovna - obstetrician-gynecologist, MD, Head. the Department of Ostetric and Gynecology Faculty of postgraduate training of doctors Medical Institute "North-Eastern Federal University named after M.K. Ammosov ", 8924662 67 22, E-mail: nduglas@yandex.ru.