2018 CARDIOSTIM BULLETIN

ST. PETERSBURG

START OF ALL BEGINNINGS
A.Sh.Revishvili

HISTORY OF CARDIOSTIM
D.F.Egorov

ESTABLISHMENT OF TOMSK SCHOOL
S.V.Popov

CARDIOSTIM 2018
INTERNATIONAL CONGRESS • 25 YEARS

XIII Pan Slavic International Congress on Cardiac Pacing and Electrophysiology "CARDIOSTIM"

XV All-Russian Symposium on Cardiac Pacing and Electrophysiology

XIII All-Russian Symposium "Diagnosis and therapy of arrhythmias in children"

XI International Symposium "Electronics in Medicine. Monitoring, Diagnosis, Therapy"

VI All-Russian Symposium on Problem of Diagnosis and Treatment of Dysplastic Heart

CONGRESS COPRESIDENTS

RAS Academician, Professor, President of All-Russian Scientific Society of Arrhythmologists Amiran Shotaevich Revishvili (Moscow)

RAS Academician, Professor Sergey Fedorovich Bagnenko (St. Petersburg)

CO-CHAIRMEN OF SCIENTIFIC ORGANIZATIONAL COMMITTEE

Peter` s Academy of Sciences and Arts Academician, Professor, Vice President of All-Russian Scientific Society of Arrhythmologists Dmitry Fedorovich Yegorov (St. Petersburg)

RAS Academician, Professor, Vice President of All-Russian Scientific Society of Arrhythmologists Sergey Valentinovich Popov (Tomsk)

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Candidate of Medical Science V.V.Kuptsov (Moscow)

Candidate of Medical Science E.D.Oleichuk (St. Petersburg)

D.A.Serdyukov (St. Petersburg)

Dear colleagues.

I am glad that we are meeting the 25thanniversary of the Cardiostim St. Petersburg Symposium at the jubilee session. It is pleasant that the idea of my friends D.F.Yegorov and Jacques Mugica was put into practice and became a tradition. It is hard to overestimate the great use given by the Cardiostim symposium. My congratulations and wishes of successful work at the symposium.

Academician Jurgis Bredikis
01.02.2018

START OF ALL BEGINNINGS

The working day of Director of the A.V.Vishnevsky Institute of Surgery by the Russian Ministry of Healthcare, President of All-Russian Scientific Society of Arrhythmologists, external special surgeon-in-chief of Ministry of Healthcare RAS Academician A.Sh.Revishvili is scheduled by minutes. And still, ahead of the Congress, Amiran Shotaevich found time to answer the questions from the editorial team.

Presidium of the Petersburg Cardiostim includes A.Sh.Revishvili and D.F.Yegorov.

HERE ARRYTHMOLOGY IS MAJOR!

- Amiran Shotaevich, this year is a jubilee one for the Petersburg Cardiostim - our Congress is 25 years old. What memories of the first congresses do you keep?

- I remember the first Cardiostim in St. Petersburg very well. It was organized by Dmitry Fedorovich Yegorov, the most authoritative arrhythmologist of our country at that period. He was the man that brought up tens of PhDs in arrythmology. These people run a lot of clinics in our country now. Yegorov` s Komsomol enthusiasm helped him organize this work, get in touch with Jacques Mugica who held Cardiostim in Nice. They worked a lot together and became great friends. Their joint effort that brought together hundreds of French doctors and professors was the thing I had never seen before!

And some Cardiostims were held, I would say, with such a “French accent”. At that time it was a large-scale event for our country because there had never been such big events in arrythmology before. And it naturally impressive as it was the evidence of great organizational opportunities or, I would say, Yegorov` s genius talent in the arrangement of large-scale events.

At the very start they were held regularly - once in two years, in February - close to my birthday. I can` t help expressing my gratitude to Dmitry Fedorovich now - I celebrated my 50th birthday in St. Petersburg. And 60th birthday as well.

- Why there?

- Of course Cardiostim played the major role in the process of formation of our professional community. The graduates of different institutions (for instance, I studied in Moscow, Dmitry Fedorovich - in Leningrad) felt as a family here. I repeat that we had never had events of such a scale before. There had been cardiologic congresses, cardiosurgical congresses and arrythmology occupied a very minor part there. Here it became major!

The wonderful initiative was born: the first Cardiostims gave the tradition to honor young winners - researchers and scientists who won first awards. Those were the most gifted people. It is worth mentioning that in the future they became the country` s leading professors. That is, in terms of science Cardiostim is the alma mater of arrythmology in Russia. Then there appeared a large number of regional conferences, we already hold Congress of arrhythmologists of Russia. But Cardiostim remains Cardiostim.

- And does everything go on without problems?

- No, there are some issues. For instance, now there are a great number of events and all of them need sponsorship support. Somethings will have to be excluded. I can say sincerely that there have even been talks that it is cold at Cardiostim in Petersburg in winter. May be skipping and not organizing this conference? I have been approached as President of Societyf Arrhythmologists and my answer was the same - Cardiostim was created by Dmitry Fedorovich Yegorov.

He created it, organized, and became father to it. It is the start of our way. If we erase history we are not going to have any future in such a way. So, with the account of the scientific significance of the event and the fact that we have a cultural capital, and a thousand delegates come, Cardiostim has been, is and will exist. This is what we agreed about with our co-sponsors.

IT IS NECESSARY TO FIGHT FOR RECOGNITION

- But You founded the All-Russian Society of Arrhythmologists that holds its own congresses...

- In 2002 my initiative led to the foundation of All-Russian public independent organization “All-Russian Scientific Society of Specialists in clinical electrophysiology, arrythmology and cardiac pacing” (VNOA). I became its President and Dmitry Fedorovich - its Vice-President. Now, every year we hold either Cardiostim in winter, or Congress of arrhythmologists in summer. It leads to competition and the spirit of competition is always useful for progress.

- You noted that VNOA is an independent organization.

- Because in the world there are two variants: arrythmology as part of the cardiological society with a small section in the country within its framework, and independent arrythmological associations. And this has always been a topic for debate. What are we - part of cardiology or an independent new branch?

We have a wonderful cardiologist-in-charge in the country, President of Russian Society of Cardiology - Evgeny Vladimirovich Shlyakhgo, an amazing man, organizer. I am in a very good relationship with him and he understands we have been creating our own field for more than 30 years working successfully and it will be difficult to take this field from us and attach it to cardiology. Even, I can tell you such a competition exists in Europe as well. There are two societies there: ECAS - the independent society of arrhythmologists, and EHRA which is part of the cardiological society. EHRA is larger and has wider financial opportunities.

- But are You keen on independence?

- I think by today we have grown into an independent new branch. No, we don’t have any official status yet. There is no such a notion as an arrhythmologist doctor, no corresponding certificate either. However, in fact such a doctor has already appeared and I state this. Herewith, he receives basic education as a cardiologist and then specializes in electrophysiology, or arrythmology as we call it. Therefore, eight to ten years of training let us prepare a decent specialist in arrhythmia.

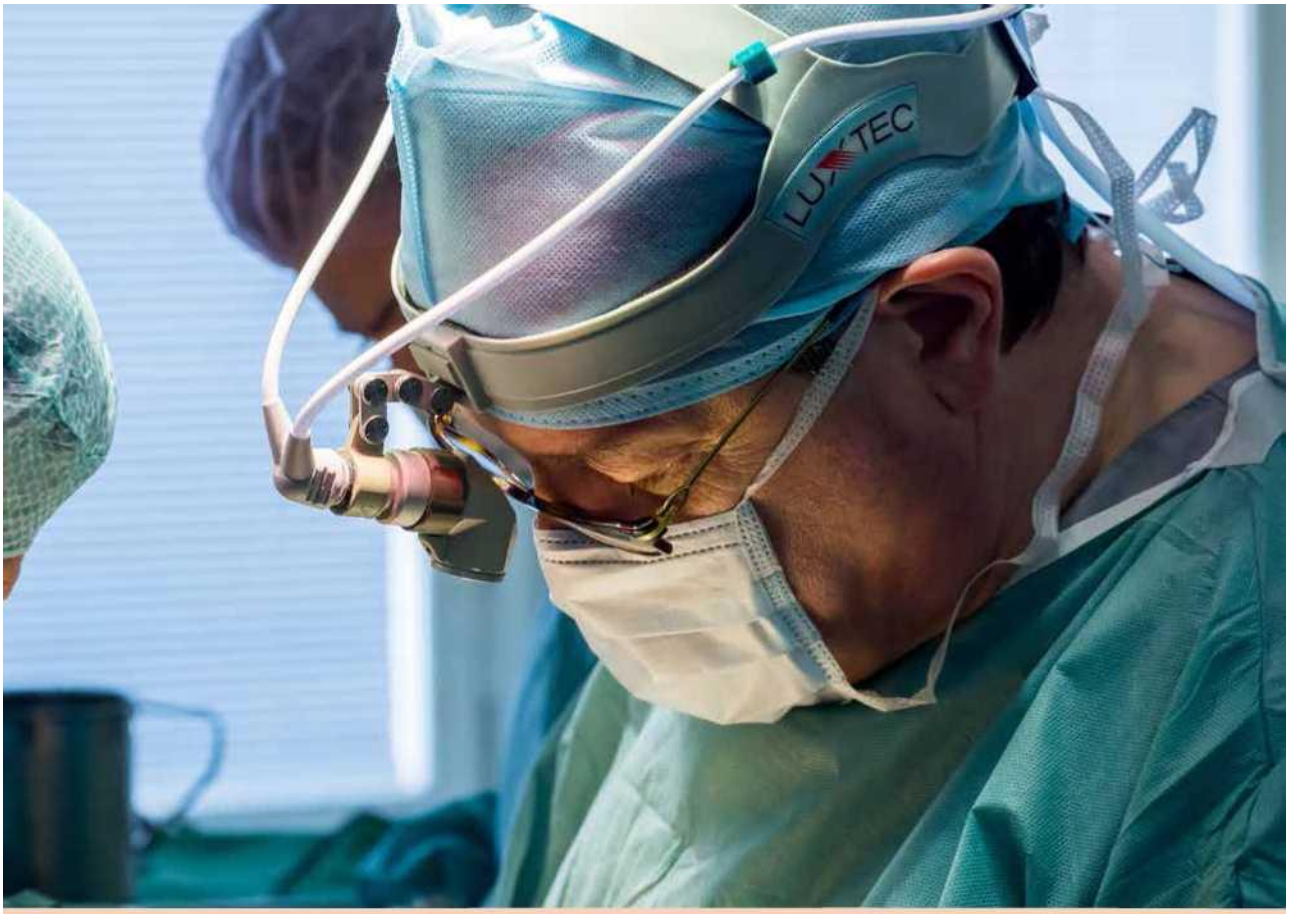
It is clear the more professional in this field a doctor is, the better he can help his patient. And of course a specialist needs a wide background. For instance, in my practice I passed all stages: pharmacological and interventional therapies, development of different diagnostic systems.

EHRA President John Camm and A.Sh.Revishvili. J.Camm - a cardiologist of international renown assembling full lecture halls, in Russia as well. At present EHRA and VNOA are realizing the joint program of improving the qualification of Russian arrhythmologists

Did cardiosurgery. Then there appeared thoracoscopic methods where, with the help of special cameras, we study the heart and remove the pathology. Having passed all these, I state confidently that there is such a field as arrythmology. But it is necessary to fight for recognition! And this is what we are doing.

I will accentuate once again that the requirements for such doctors are very high. Because an arrhythmologist is not just a cardiologist, not just a specialist in catheter technologies, not just a surgeon, at last. It is a man who has to master all these things. This is no doubt a multidisciplinary specialty.

We can often come across a different approach abroad. That is where such notions as arrythmological team, arrythmological consultation came to us from. I will explain. For example, there appears an issue of what a man is going to have - bypass grafting or stent placement? This is a complicated question. Because the results are equitable. To avoid misbalance, teams gather. An arrythmological team usually consists of an electrophysiologist (arrhythmologist), cardiologist (specialist on arrhythmias), a patient himself and a consulting physician; they assemble and start discussing his problems.



“I find it is really necessary for people in the operating room”, Amiran Shotaevich says.

They choose the way of treatment for him. Actually, in 70-80% of cases arrhythmia should not be treated but observed. So I always tell the beginner speacialist: first, examine the patient. Obtain full information about what is happening to him; assess how threatening for life his arrhythmia is. Each person on the Earth sometimes has irregular heartbeats but it does not mean we have to treat everyone pharmacologically. When concomitant diseases are found, treatment methods are chosen.

And then, the team of 5-6 specialists discusses the situation with the patient, and each one expresses his opinion. After that, the patient should choose who he trusts more and what he likes more. Herewith, the patient defines who is sincere with him, who has more experience. So I think that for each patient there is only one doctor that can help him, who he trusts. A patient does not trust a group of people.

- But the concept does not meet the recommendations of doctors` European and world organizations. Why did you choose this way?

- This is how it turned out in my life. I started with open surgery. And that was when the issue appeared: where are arrhythmological zones located? In those distant 70s there were no electrophysiologists, so I had to master the catheterization of vessels myself, implant electrodes in the heart, start from the beginning.

Different variants were tried. The real breakthrough took place when we decided to cauterize with a catheter. Good results appeared. Before that we had operated in big teams, bed rest had lasted for a month or more afterwards. And now I got right with a catheter - and a patient left in a day. That is why the interventional catheter technology is so popular now. Of course it has passed through great changes and now research methods have made a gigantic breakthrough.

CARDIOSTIM FLIES HIGH

- And do You think Cardiostim manages to catch up with these trends?

- That` s it! All these trends are presented in its program. Fundamental research is compulsory. Within the framework of Congress there are held a lot of satellite symposiums - on electronics, new technologies. Dmitry Fedorovich always tried to invite all well-known professors from the whole country. He knows each one personally. He called each one 20 times.

- Isn` t it the way any person would behave?

- No, I don`t know another person like him. Such a great organizer, such a patient man who would like to arrange everything. And the result was excellent! Cardiostim is the start of all beginnings, in terms of both our scientific thought and personal communication. We did not get any basic education on arrhythmology, we created everything ourselves. But for these meetings, transfer of French doctors` experience when they tried to train us at the first stage, there would be nothing. I say Cardiostim thinking of Yegorov.

- Amiran Shotaevich, have there ever been any events at Cardiostim memorable in all your life and having great influence on You?

- Well, two events. The first is the award for the best report of a young researcher which Dmitry Fedorovich gave me. I remember everything very clearly. I was young and proud to get the first prize. At those times nobody was interested in honoraria and such stuff but it was pleasant. And the second event was the opening of VNOA in 2002 when I was standing on the stage and offering development plans and then President was elected. Cardiostim was quite a strong organization in terms of structure, knowledge spread, but the society is society. First of all it is the permanent website, training and clinical recommendations which we issue; of course it is a legal body that can hold negotiations and should be taken into account. It was necessary to create it and that is what we did.

Professor
Vitaly Andreyevich Sulimov

- Society is holding Congress too. And now, as you noted, except the most attended Congresses in Moscow and St. Petersburg, we have other significant events.

- Academician Sergey Valentinovich Popov organizes brilliant schools in Tomsk. They have their roots in the 1970s when scientific conferences, smaller ones in scale, were held by the founder of the Tomsk school, academician Vikenty Vikentyevich Pekarsky. Now it is without any doubt a large-scale event of great significance for Russian arrhythmology. But looking at the last century we see that the fights were intense! We were young and intransigent. I remember scientific fights between me, Professors Galitsyn, Yegorov, Sokolov, Sulimov, Pekarsky. In search of truth we did not insult each other but the opposition was harsh, I would say - too harsh. We parted very much unsatisfied, nobody wanted to surrender. Where did these problems come from? The source of arrhythmia was not clear as well as its pathogenesis. There were a lot of theories. As there were only the first researches held everybody had his own interpretation. But the experience got accumulated and in a decade everything got clear. Everything was put in its own place. Anatomic heart changes that could cause arrhythmia were described decades ago but there was no electrophysiology at that time. We assigned electrophysiological phenomena to the anatomic findings of the past. And as it became clear later in 95% of cases it was not right. When we started operating and looking at what we were removing it turned out there were no coincidences...

In Novosibirsk Yevgeny Anatolyevich Pokushalov works - he is a talented man with his own vision of electrophysiology. Together with him we received the State prize - the country` s highest award. It was awarded for the study of arrhythmic mechanisms and its interventional treatment. Now the Novosibirsk school made a famous name for itself. It has international authority.

It is necessary to mention one more Petersburg event which appeared in the Almazov National medical research center. It is held by Dmityr Sergeyevich Lebedev. The first conferences were local but the recent 6thSchool of practical arrhythmology is already a significant event.

There are a lot of demonstrations and procedures. What differenciates arrythmology from other fields is that we show everything online: there is a procedure going and we are training our students during operations. Now there are a lot of new technologies! The training schools I am talking about let young scientists and doctors be updated about the latest achievements.

We have very good children` s arrythmology where Maria Aleksandrovna Shkolnikova does a great deal of work.

There are schools held once in two years in Krasnoyarsk, we usually discuss implanted devices there. In Perm there have been some of our events with the focus on auricular defibrillation. There have been our conferences in Yekaterinburg, Krasnodar.

In Moscow there is an arrythmological club. It is headed by Professor Yu.M.Pozdnyakov. At Institute of Prophylactic medicine K.Davtyan organizes a basic course on electrophysiology. All these are the children of Cardiostim. In a figurative way of speaking, the tree of Cardiostim rooted deeply and gave young, strong branches. Now in our country there are more than 85 institutions or centers dealing with arrhythmia. The Society of Arrhythmologists has about 1000 registered members.

The new generation is growing, we are already in the middle or even older. And it is necessary to take into account that arrhythmology was based only on X-ray research methods for many years. With X-ray, we did the visualization of the heart. To get a good result, it was necessary to get good ray treatment. Like in Mikhail Romm` s film “Nine days of one year”. Like those nuclear physicists we wanted to get to the truth, see everything ourselves. But in terms of health it was not good for us.

- A high price.

- Yes, a high one. To be fair, I will notice that X-ray methods allowed for the understanding of the situation and the development of new treatment methods. Now there have appeared other technologies but at that time there was no other way...

- The research You are talking about took place in the 1970s and 1980s. What scientists, in your opinion, therefore made the greatest contribution into the development of national arrythmology?

- I will start with Academician Jurgis Bredikis. Lithuania created national electrophysiology and surgery of arrhythmia, they had started a bit earlier than all the rest. Then there is Professor Viktor Polyakov - from the Samara school of surgery that did a lot. I have already spoken about Pekarsky. He played a great part - was one of the first to make up a defibrillator in Russia. Leo Antonovich Bokeria made a precious contribution into arrhythmological surgery; it is the Bakulev center where I mastered the fundamentals of electrophysiology and made way to interventional technology. Then I united intervention and surgery. From the middle generation - Yegorov, Popov, Sulimov, Galitsin.

IN PETERSBURG WE ENTERED THE WORLD FAMILY OF ARRHYTHMOLOGISTS

- You mentioned that the development of our arrhythmology was influenced by French specialists who visited out Congress. Who else would You like to remember?

- At Cardiostim we made friendly relationships with foreign colleagues - Americans, Germans, Frenchmen, scientists from other countries. Figuratively speaking here we entered the world family of arrhythmologists.

For instance I worked in close contact with Professor Max Shaldach.

He was an outstanding physicist and President of Biotronic company. It was a wonderful person who always experimented with new trends and helped Russia a lot. Max always said that they, Germans, always felt guilty towards Russia. Why did our cooperation take place in the 1990s?

I remember I was occupying a small room on the fourth floor in the Bakulev center at that time. However, I shared it with Professor Aleksander Davidovich Levant who dealt with pacers. Sometimes Sergey Semenovich Grigorov and Viktor Sergeyevich Savelyev worked there.

I was literally sitting on atomic apparatuses, although they were not dangerous. When Shaldach came there was no place to put the third chair. Then, for the first time, I had the opportunity to think up, develop, experimentally implement new technologies in the clinic. It was amazingly fast - the process shortened to some months.

For instance, we got the idea of a new multichamber defibrillator (we were the first in the world to put in into practice). I made up all medical algorithms. I can explain. What is a defibrillator? If a heart stops the discharge is given or, sometimes instead of a discharge - pacing. As it is known the heart has four chambers: two atriums, two ventricles, and each one has its own arrhythmical problems. The idea was

I have a lot of bright and good memories connected with Max Shaldach. But one of them is tragic.

It is necessary to mention that Max liked flying a lot. He had a pilot but as he was a pilot himself he often flew the plane himself. The plane was the best means of transport for him today here, tomorrow there. He moved around Russia by his plane, and during some hours he could turn out to be in one of our cities.

So, there was a Boston Congress in progress where my report was accepted. I came by regular flight. We met in the Congress Hall. Shaldach told me: “We are flying away in a team and you can fly with us without spending money, also you can look at new developments at the plant and am going to report about our multichamber defibrillator.

to give each chamber its own electrode which would read information and give its chamber necessary treatment. It was a unique decision which Shaldach put into practice. We checked in the experiment, there were a lot of implantations after that. There was such an apparatus called Ta-hos that was developed by us together. It was one of the first apparatuses in the world that we put into the infraclavicular region. Before that, everything had been placed in the stomach. The equipment weighed about 300 grams and there were a lot of wires. And we decided to put on the above. We made thin electrodes and then it spread all over the world. Several thousands of these apparatuses were implanted, some patents were obtained.


Max Shaldach

The uniqueness of Shaldach was that, if he was interested in something he responded immediately - came by his plane, took drafts, took me or my team out. In his Institute we gathered with engineers, physicists, biophysicists. It did not matter whether they were German or American because it was a multinational team. All this was discussed and the decision was made about what to do next. If it was approved an experimental sample was made. Of course there were failures, such things could also happen.

Alongside with new developments, he helped our country with the implementation of defibrillators a lot. There hundreds of devices.

Let us put off the flight for the next time". This is how we parted. He came to Berlin and left his passengers. The next flight had to take him to his enterprise. He got into the plane and his heart stopped when the plane was pulling up. I should have been there with Max at that moment...

When I came home from Boston I was told about Shaldach` s death by my wife the moment I entered my flat. The initial shock and sense of grief were replaced by a question: could I have managed to take over control? By that time my friend had trained me to fly a plane a little: to take off and land. But specialists explained that it would not have helped because the tragedy happened during pulling up. I would not have been able to do anything.

Professor
Virtor Petrovich Polyakov

brought to Russia free of charge and implanted by our researchers.

Unfortunately, Max died in a plane crash: his heart stopped when he was flying his plane.

- Two years ago we also lost Vitaly Andreyevich Sulimov - a scientist who did a lot for our country.

- My friend, Vitaly Andreyevich was one of the best cardiologists and arrhythmologists of Russia. He was one of the founders - one of the first people who started catheter procedures. He wrote a lot of wonderful books on arrhythmology, in particular, issued one of the first monographies on ciliary arrhythmia. The wonderful knowledge of language and brilliant background brought world fame to the outstanding cardiologist. Unfortunately, oncology stopped my friend` s life. But his school continues its work and his pupils are developing what he started.

I remember very well how I gave him a call and asked to make a report. He said he could not and would be available in half a year. Unfortunately in half a year we did not meet... the memory of him remains. At Congress of arrhythmologists we had a section in honor of Viktor Petrovich Polyakov and Vitaly Andreyevich Sulimov. There were reports dedicated to their memory.

- In January it was two years since You had become the head of the Vishnevsky Institute. Tell us please, have there appeared any new projects in terms of arrhythmology?

- I will start speaking with the fact that my assignment took place right after the New Year and was absolutely unexpected for me. I became academician in the Bakulev Institute, was elected President of Society of Arrhythmologists and had some offers, of course. And then I received a specific proposal from Ministry of Healthcare. Without any doubt I knew something about the Vishnevsky Institute. But my interests include cardiosurgery, cardiology, arrhythmology. And here is a kind of a surgical center with more abdominal problems: for instance, liver, pancreas gland, intestinal tract. But in these walls cardiosurgeons have worked for a lot of years and very efficiently. There were three departments here. The first operations were done on small children` s open hearts by Vladimir Ivanovich Burakovsky. And last year we were celebrating the 60th anniversary of such first operation.

Arrhythmology existed here as routine practice and not science - pacers were implanted. Professor Andrey Mikhailovich Zhdanov worked. So my field was represented and I gave my agreement. Naturally I started to develop these trends. Now we have created the center of endovascular surgery which will be headed by academician Bagrat Gegamovich Alekyan. When I came there was only one broken X-ray machine out of order. Today we have 4 latest modern machines. In this center there are done all catheter operations: valve delivery and implantation, stent delivery and implantation. The center appeared during a year and a half. Ministry gave financial assistance at the first stage because I said at once we had very few new trends.

Second, we established the arrhythmological center. Some young scientists came, and there are some more I will ask to join.

- Your students?

- Yes. However, it may be incorrect to call them my students as only a student himself can say who his teacher is. I can only say that this is the young generation that grew up with me. Some of them are already holding their own conferences, for instance, Farkhad Rzaev, Artem Sveshnikov, Karapet Davtyan. Interesting works are also demonstrated by Nikoloz Lomidze, lena Artyukhina, Georgy Matsonashvili. In general, I supervised 18 doctoral and more than 40 candidate` s defended theses. Then almost all these doctors became heads of large divisions. Not long ago I visited Artem Sveshnikov at the international conference on auricular fibrillation. There was the outstanding Russian scientist Vadim Fedorov, he demonstrated amazing things. He works in America and he has his own laboratory there. We agreed to arrange the similar one in the Vishnevsky Institute. Vadim agrees to come here and train our people. I want to note that Vadim Efimov and Vadim Fedorov are without any doubt prominent scientists of global renown and I want these world renowned stars to work in Russia. They started here but made careers there because we lacked good, well-equipped laboratories I dream of, and I want the Vishnevsky Institute to have such a laboratory. We will try to do it in two or three years...

- Thank You for this meaningful conversation, Amiran Shotaevich. What can You wish the participants of this Cardiostim?

- Their plans coming true. I am sure this Cardiostim will be not less successful than the previous ones.

Interview was done by Aleksander Esgerlis (emh@mail.ru)

The editorial team expresses its gratitude to V.V.Kuptsov for precious assistance in the preparation of this material

HISTORY OF

In this issue of Cardiostim Bulletin the editorial team continues its founders, President of St. Petersburg Society

HOW CONGRRESS GOT ITS NAME

Dmitry Yegorov

I already told how I got acquainted with the outstanding French arrhythmologist Jacques Mugica, how we started joint work in holding the international Congress in St. Petersburg. Now, I think, it is time to throw light on the origin of its name - Cardiostim.

...We had already done a lot for the preparation of the first Petersburg forum but there was still no name of it.

- It is impossible to postpone the solution of this issue anymore - Jacques said once. - I will assemble a meeting at Cardiostim and we will define it.

It is necessary to mention here that by that time Mugica had held an international Congress in Nice named like this for quite a long time (once in two years). And then that event at the Mediterranean coast was world famous and large-scale.

My French friend was very accurate in such business and on one evening during the Congress at Nice we got assembled by Mugica. I already cannot recall all participants but I am sure Seymour Furman was there. And at that moment it was No. 1 man in arrythmology in the USA. He was no less than the first doctor in the world who performed the endocardial pacing of heart in his clinic in 1958. Those were the people who participated in the meeting which was historically important for the Petersburg Congress! But I memorized his presence not because of the said above but because his performance was scoring, as they say in sports. However, first things first.

First of all, I want to emphasize the spirit of that discussion. The fact that I and Mugica wanted to organize the international Congress in St. Petersburg was welcomed with great joy. It was not a response to my or Jacques` merits but reflected the desire of the world doctors` community to help our specialists join it as quickly as possible.

CARDIOSTIMA

to publish materials about the history of our Congress written by one of of Arrhythmologists, Peter` s Academy of Sciences and Arts Academician
Dmitry Fedrorovich Yegorov

Jacques Mugica

We started to discuss what area we should occupy, i.e. in what way it would be different from the rest of international forums. At the first stage an opinion was formed that Russia could become a leader in the post-Soviet area and the center around which all countries that were parts of the Soviet Union would get united in the new form and new rules.

And then pioneer Furman spoke:

- All countries - sounds too vague - started Seymour and offered his variant at once. - Let` s limit ourselves with Slavic ones and then Congress will be Pan-Slavic.

Mugica liked this idea a lot and as I said before he had Russian roots on maternal side:

- And I give you the name of mine - and it will be “Pan-Slavic Congress Cardiostim”!

I think it sounds better in English than in Russian. As a result, masters came to "panslavic cardiostim”. The name that was localized to escape confusion with the French version.

Nobody objected to Cardiostim but “panslavic” received a lot of opponents immediately and the most famous of them was Max Shaldach. He even wrote letters to Russian Ministries of Foreign Affairs and Healthcare about how much he did not like this idea. Shaldach thought that such a variant of the name sounded a bit Nazi. After the expression of dissatisfaction by such an authoritative expert Congress could stop existing without appearing. All principals declared being detached from me saying it was only my initiative and I had consulted nobody. I do not want to say the names now but even the closest patrons who I considered to be my devoted friends refused to have anything to do with me openly.

Only some months before the first Congress: Dmitry Yegorov and Jacques Mugica

But we survived all these attacks and, as a compromise, we called it Slavic Congress instead pf Pan-Slavic for many years. In some time the adjective in the name just got outdated. Cardiostim remained. Mugica was the co-Chairperson of the organizational Committee of the Petersburg Congress and its active participant for many years and Cardiostim as the name of our common Congress is honor to respect and memory about this outstanding man.

GENEALOGY OF CARDIOSTIM

Our Congress has very famous “parents”. Without any doubt, the French Cardiostim is its recognized “father”. However, Jacques Mugica was not going to fully reproduce his Mediterranean Forum at the Baltic coast but he shared his achievements and experience very generously.

Initially, Jacques did not think of arranging Congress here but considered the production of pacers, electrodes, catheters for coronary catheterization. That is, he wanted to take part in the development of cardiology and cardiovascular surgery in general - that was the greatness of this man, those were the purposes he set. And, accordingly, when nothing of these succeeded despite his efforts, he suggested arranging Congress together.

Before that we had held conferences but they were national, not international ones, and at that moment I had a very bad idea of the French Cardiostim Then Mugica invited me to his Congress, I looked at its monumental scope and said that such a thing was impossible for us. Jacques objected quietly: “I started with 200 people as well and have reached such a result in twenty years”.

He started to show what the Congress of international level should be like. Then I travelled to France not to operate but to spend evenings looking through the necessary documents and after that Jacques explained everything step by step. We held the first Cardiostim in hotel “Saint-Petersburg”. I made a report, he corrected something. So, the place was his idea. Before choosing that hotel he had travelled around the whole city and examined all possible sites. He took into account everything.

I was surprised that Professor of global renown paid attention to so many small details, as it seemed to me at that time. “But quality is the combination of these very details”, - the French master explained his approach to me. And being sincere I can say that I would hardly ever have reached such good results in the organizational activity but for Jacques` supervision. For about a year and a half he was very patient teaching me, a man who had grown up in the Soviet Union, the basics of organization in the competitive capitalistic society. In search of optimal solutions we wrote piles of paper. 168 clauses on the organization of Congress were developed in detail by us. All these clauses were dictated by Mugica. I am still devoted to my teacher` s ideas. However, I changed something in them and their total number is 162 now.

...And “Mother” of the Petersburg Forum may be the All-Union conference that was held by Academician Jurgus Juozovich Bredikis in Kaunas.

In the 1960s Bredikis established Center for treatment of heart arrhythmia which initially had the Republican status and got the All-Union one in the 1980s. But before it was officially called All-Union Center for surgical treatment of complex heart arrhythmias and pacing by Ministry for Healthcare of the USSR, there had been operated adults and children from the whole Soviet Union. It is possible to say that arrythmological schools of the whole country have their roots there as on the Neman shores the medical workers of most Republics trained. For instance, I first came to Kaunas in 1974 when there was held the All-Union conference of medical technical society.

And I got closely acquainted with Jurgis Juozovich in Leningrad, at Clinic of Department Surgery of the First Medical University (now - Academician I.P.Pavlov Saint-Petersburg State Medical University).

The Lithuanian guest was very much interests in the surgical treatment of coronary heart disease. That was why he came to Vassily Ivanovich Kolesov, the outstanding Soviet surgeon who was the pioneer of the new trend in the treatment of these patients. Vassily Ivanpovich assigned to me the supervision over Bredikis who, as I remember, was interested mostly in methodological instructions and a vascular stapler. At that time Jurgis Juozovich told a lot about his work and as a result I started travelling to Kaunas practically each year. Later I worked a lot with his colleagues in Kamenets-Podolsk where we managed to start the production of electrodes. Possibly for that reason Bredikis treated me like his assistant at the All-Union Center.

At Cardiostim in 1998.
Left to right: V.V.Ermakov, V.U.Bondar, S.V.Popov,

Gradually the situation in Leningrad started developing and there we often spoke in the society of surgeons, cardiologists (there was no society of cardiovascular surgeons yet) and since 1983 we started holding town conferences. We managed to create the arrhythmological department arranged in a usual hospital which was the first in the country. Having forty beds we performed up to 550 operations a year. It seems interesting that we implanted 1200 atomic heart pacers there...

Our last “working” meeting with Jurgis Juozovich took place in the end of 1991. I remember he said that “there is no All-Soviet Center anymore so you should take the initiative and hold All-Russian conferences. We are separated now”. And as I understood the situation as well, we had started acting and in 1993 we held the first Congress.

Ju.Ju.Bredikis
(from the archives of S.V.Popov)

MAJOR STAGES OF ESTABLISHMENT AND DEVELOPMENT OF THE TOMSK SCHOOL OF ARRHYTHMOLOGISTS S.V.Popov

Research Institute for Cardiology, Tomsk National Research Medical Center of RAS

Cardiac arrhythmias were always of interest for practical cardiologists. The issues of their diagnostics and treatment are on the top of the list of the most important problems that scientific and practical cardiological meetings, research and developments are devoted to. The attention in this widening field is accentuated by the successful development of new non-pharmacological methods of arrhythmia treatment. Modern high technologies intensely implemented into clinical practice allow increasing the efficiency of treatment for different cardiac arrhythmias and conduction.

Interventional arrhythmology got formed and defined during the last decades as an independent medical field. It took the achievements of clinical cardiac electrophysiology and cardiology, cardiosurgery and cardio electrotherapy. The complexity of the functional mechanisms of heart in human body, diversity of pathological changes lying at the basis of heartbeat, led to the intense stream of information about the nature of heart, its diseases and possible methods of radical removal of arrhythmias. The widening range of treatment methods, improvement of medical equipment accompanied by its growing complexity, set high demands for specialists working in the field of interventional arrhythmology.

Department of surgical treatment for complex cardiac arrhythmias and pacing, of Research Institute for Cardiology, Tomsk National Research Medical Center of RAS , which is Siberian Federal Center of Arrhythmology, since its opening in 1980, to a large extent determined progress in the treatment of complex cardiac arrhythmias not only in Tomsk but also in the region of Siberia and Far East by way of establishing arrhythmological departments in large cities, implementation into clinic al practice of major modern methods of diagnostics and treatment of cardiac arrhythmias and training of specialists.

The major trends of the scientific and practical activity of Department for surgical treatment of cardiac arrhythmias were established by its first head, Academician of RAMS V.V.Pekarsky who was the founder of the Tomsk School of arrythmologists. The works of V.V.Pekarsky and his students in all fields of arrhythmology starting with temporary treatment cardiac electric pacing in the 1970s, were always up-to-date and practically significant and some of their sections have the world importance.

The scientific search in technical, experimental and clinical trends in the area of electric cardiac pacing, electric cardiodefibrillation and assisted circulation started at Chair of General Surgery of the Tomsk Medical Institute in 1964.

Starting from 1964, under the supervision of V.V.Pekarsky, there was developed a range of electric cardiac pacers for single, paired and combined pacing, including a combined electric cardiac pacer - defibrillator. There were implemented operations on the implantation of permanent pacemakers for the treatment of bradycardias, then there was developed a range of external electric cardiac pacers for single, paired and combined pacing, including a combined electric cardiac pacer - defibrillator. There were studied the harmful peculiarities of a defibrillating impulse and offered practical recommendations implemented into a clinic and purposed to prevent myocardial injuries.

One of the major scientific trends in that period was the study of the theoretical, physiological and clinical aspects of the new kind of slowing electric cardiac pacing by paired and combined impulses. After the detailed experimental study the method was successfully applied in 1971 in a cardiosurgical clinic for treatment of tachycardias and arrhythmias.

During next years, together with engineers, there was developed the electric cardiac pacer АСУРС (ASURS) - the automated system of heart beat management in which there was first applied the cardiosynchronized burst of electric impulses.

Subject to the detailed study were the issues of the possibility to model various arrhythmias maximally close to clinical practice, the influence of these arrhythmias on the geodynamic characteristics of a healthy and damaged hearts as well as the appliance of electric cardiac pacing at this. The thorough study of this issue in an experiment allowed the successful appliance for treatment purposes of different kinds of electric cardiac pacing in case of severe arrhythmias in the clinical practice of treatment for acute myocardial infraction. Since 1975, to treat acute heart failure, at Chair of General Surgery of Tomsk Medical Institute they started to develop the methods of separate and combined appliance of electric cardiac pacing and assisted circulation with the help of an assistor. The experimental clinical work done in this trend demonstrated that in a range of cases, for instance, with reversible heart failure, it is necessary to use the phenomenon of post-extrasystolic potentiation (due to the figural expression of American cardiologists - electrodigitalization) obtained by way of paired electric pacing.

At the same time, in most cases only cardiac pacing turns out to be insufficient and that is why the heart need medical assistance with the application of one or another method of assisted circulation. For the purpose of solving the indicated problem, V.V.Pekarsky came up with the concept of simultaneous management of two heart functions: electric one with the help of electric cardiac pacing and mechanical one with the help of one of the means of assisted circulation by the method of direct cardiac massage, peripheral or central counterpulsation or intra-aortal counterpulsation. The idea of simultaneous application of cardiac pacing and assisted circulation was first put into practice in the form of a combined biocontrolled electric cardiac pacer and the management system in the apparatus ABK-5MC. In 1983 State Committee on science and technics ahead of time completed the study “Development and implementation in the clinics of the Tomsk branch of ACMC of the method and specialized device for performing simultaneous electric cardiac pacing and assisted circulation by intra-aortal ballooning (ECS and AC IAB)”. The ABK-5MC apparatus was launched into mass production as well as in the clinic of general surgery there were obtained some authorship certificates.

The essentially new stage of the development of research on electric cardiac pacing was the opening in 1980 of the first in Siberia and the Far East specialized Department of electric cardiac pacing and assisted circulation (later - Department of surgical treatment for complex cardiac arrhythmias and electric cardiac pacing). The major trends of work were the solution of the actual issues of diagnostics and treatment of cardiac arrhythmias, electric cardiac pacing and assisted circulation, the development and implementation of new treatment methods for cardiac arrhythmias. The major tasks were: rendering specialized assistance for patients with acute and chronic cardiac arrhythmias in need of EP study and ECS implementation; consultation assistance on the issues of diagnostics treatment for cardiac arrhythmias; training of doctors in the issues of interventional and surgical arrhythmology. It is worth mentioning that since the opening of Department and till the present day its functions have included rendering highly technological assistance for patients of all Siberia and the Far East.

“Grand” electrophysiology in the Tomsk Research Institute for Cardiology started with the registration of the His bundle potential by self-made catheters in 1981 and developed by method of “boiling” in its own juice as contacts with those few clinics of the country which mastered this research method at that time (Moscow, Kaunas)got established later. This self-education partly taken from publications, partly - just from ideas like “it is logical”, at last led to the formation of a scientific narrowly specialized trend in this field of cardiology.

In 1982, by invitation from V.V.Pekarsky and E.O.Gimrikh, one of the pioneers of this trend in our country Professor V.A.Sulimov and Doctor V.D.Vakhlyayev from Moscow performed demonstrative intracardial electrophysiological research by all “rules of art” in the Department. It was very good experience for the whole staff of the Department. It is also hard to overestimate cooperation with the leading arrhythmologists of the country Professors A.Sh.Revishvili (Moscow), S.P.Golitsin (Moscow), D.F.Yegorov (Saint-Petersburg), colleagues from a lot of other arrhythmological teams including the foreign ones.

In the mid- and late 1980s under the supervision of the second principal of Department Professor E.O.Gimrikh, the mechanisms of different tachycardias were intensely studied, especially the electrophysiology of the conductive system of patients with the paroxysms of auricular fibrillation. There was held the selection of individual prevention anti-arrhythmic therapy on the basis of chronical EP study. Comparing the efficiency of prevention anti-arrhythmic treatment of supraventricular and ventricular tachycardias during the empiric and special (with the help of electrophysiological research on the basis of testing medicine) selection of therapy, we saw the advantage of the latter. The dissatisfaction with the results of long-term treatment selected on the basis of electrophysiological research of heart, encouraged to search for the prognostic efficiency criteria of prevention therapy.

In 1985 the trends of the Department` s work were detailed: clinical assessment of long-term pharmacological therapy; electric cardiac pacing in treatment and prevention of tachycardias; automatic cardioversion - heart defibrillation; surgery of conductive system; development of up-to-date issues of diagnostics and treatment of cardiac arrhythmias on the basis of the latest fundamental and applied research in the field of cardiac electrophysiology and pathology. In clinical practice there were implemented some new developments: treatment of tachycardias with the help of implanted ECS (programmed and anti-tachycardiac ECS); treatment of tachycardias with the help of implanted and external defibrillators (there was developed an external automatic defibrillator and the variant of an implanted defibrillator - authorship certificates); treatment of tachycardias with the help of surgery of cardiac conductive system (transvenous destructions of AV connection).

The priority in the problem of treatment for sudden death with help of implanted defibrillators belongs to Professor Mirovsky (USA) who was the first to start experiments in this area and then implemented this method in a clinic in 1980. Experiments in the field of automatic defibrillation started in Tomsk in 1979 (CSRL TMI) and continued at Research Institute for Cardiology of SD RAMS. The joint work of medical workers and engineers turned out to be fruitful and resulted in 3 USSR patents, the first (unfortunately only the test sample) in the USSR implanted cardioverter - defibrillator.

In 1983 the Tomsk scientists published the first work in the world that showed that the biphasic electric impulse decreases the threshold of defibrillation by 30-40% in comparison with the monophasic impulse applied at that time. In 1985 the authorship certificate “Defibrillator” was obtained. The first foreign work (Schuder et al.) with similar results was published a year later (1986). 7 more years passed before a defibrillator with a biphasic impulse was mass produced abroad. This novelty decreased the size of a very large implanted device by 28%, its weight - by 20%.

The priority in the development of national external and implanted cardioverters-defibrillators belongs to Professor V.V.Pekarsky. Whole scientific teams have been engaged in the issues of defibrillation almost since the establishment of the Department. The results of this work were researches having world priorities. In the 90s national developments started being used in foreign models. It is widely known that V.V.Pekarsky and his team were about to implement national defibrillators into mass production but absence of financing resulted in the fact that Soviet science did not receive his developments. Only in 1999 by the goodwill of Director of Biotronic (Germany) Professor Max Shaldach and Professor A.Sh.Revishvili (Moscow) for the first time at the Ural in our department there were implanted modern cardioverters - defibrillators. Each year in our center and in many other arrhythmological clinics of Russia the experience of implanting defibrillators and resynchronizing devices for the treatment of life-threatening ventricular arrhythmias and severe heart failure is being accumulated.

The first work devoted to the intracardial technique of creating the full AV blockade was published in the beginning of 1982 (The New England Journal of Medicine. Vol. 306, №4). The second work on this topic came out in August 1982 in JAMA (Vol. 248, №7, Scheimann et al.) not knowing about these publications in November 1982 at Research Institute for Cardiology of TSC SD RAMS there was performed the first successful endocardial destruction of AV joint of a patient with the paroxysmal atrial fibrillation. Later this scientific trend was continued successfully. The bipolar way of destruction has the world priority and is applied when it is impossible to succeed by a monopolar was. Before the start of the 90s it had been considered that intranodal AV tachycardias have their own re-entry circle directly in the AV node itself. Today, due to the development of the ablation technique, these ideas have changed dramatically. Before 1986 in the whole world including Tomsk, some patients with severe paroxysms of AV-nodal tachycardia who pharmacology could not help had experienced the destruction of AV node with the creation of the full AB blockade, and the permanent cardiac pacer was implanted. With the account of the dissatisfying results of the destruction of AV node of patients with ventricular fibrillation, there appeared the necessity to develop the new intracardial technology that allowed successfully treating AV nodal tachycardias without the development of the full AV blockade.

This purpose, from our point of view was almost reached. The results of “electric contusion of AV node”, as we called it then, were published in 1987. As it got clear later these were the first in the world publications on modulation (change of electrophysiological properties) of AV node, and in 1992 it became clear that we had held the ablation of “fast” way. For non-specialists and even for foreign colleagues in this field it is hard to imagine how it was possible to do that careful work millimeter by millimeter with “self-made”, unmanageable catheters. For some it looked adventurous, for V.V.Pekarsky it was vitally necessary to “advance” science and search for something new.

In opposition to the existing opinion about the higher efficiency of auricular electric pacing methods, we found out that, with the help of ventricular pacing, the sinus rhythm at the management of supraventricular tachycardias gets stabilized more often than with auricular electric pacing methods. The programmed ventricular electric pacing by the bundle of stimuli and delays between stimuli has undoubted advantages over the programmed ventricular electric pacing by one stimulus in the management of both supraventricular and ventricular tachycardias as during the charge of the bundle of stimuli the notion of “termination zone” is lost. Moreover, the usage of this method of pacing excludes the necessity of taking into account the location of the re-entry circle in the ventricular myocardia and it is practically quite important. This principle is used in modern cardioverters-defibrillators.

The scientific and technical search allowed us to develop with the engineers of the enterprise “Electropulse” and implement the radiofrequency generator “Electropulse” RF 100 TZ” into clinical practice not only in Siberia but also in different Russian cities. The continuation of this cooperation was the creation and implementation of the universal electrophysiological set “Elcart” that has the European CE mark, allows the performance of diagnostic electric cardiac pacing, determination of the accurate arrhythmia mechanism and holding the radical intracardial radiofrequency ablation of tachycardias. Methods of intracardial RF ablation occupied its place in the range of means and ways of removal and prevention of cardiac arrhythmias and became a standard and highly efficient operation in the treatment of supraventricular tachycardias obstinate to usual therapy, additional ways of conduction, AV-nodal re-entry tachycardia, different forms of focused auricular tachycardias, auricular flutters, idiopathic non-coronarogenic ventricular tachycardias and ventricular tachycardias in combination with CAD and other heart diseases as well as for the performance of isolating procedures for auricular fibrillation.

The intracardial ablation of tachycardias is more widely used for children of different ages. Today a modern arrhythmologist doctor has a wide range of different equipment.

At the department of surgical treatment of cardiac rhythm disorders, special attention is devoted to practical healthcare in the form of rendering consulting assistance on the issues of diagnostics and treatment of cardiac rhythm disorders. Due to the training of doctors from Russia and CIS, the implementation of advanced technologies in Russian cities, arrhythmological departments have been established in the cities of Siberia and the Far East (Krasnoyarsk, Novosibirsk, Chita, Khabarovsk, Vladivostok, Tyumen, Yakutsk, Ulan Ude etc.). The specialists who had residency training with us and finished postgraduate training work not only in many Russian cities but also in the CIS countries and abroad.

The department regularly organizes conferences, schools for young specialists on the issues of interventional arrhythmology including the involvement of foreign colleagues. In recent years there has been a significant increase in scientific and practical cooperation with foreign specialists.

Since September 2004 the Siberian Federal Center of Arrhythmology has occupied a new building. The best thing about the department is its staff. Here you can find real professionals, specialists devoted to what they do, amazing scientists and first-class doctors: PhD R.E.Batalov, candidates of science I.G.Plekhanov, G.M.Savenkova, E.V.Borisova and I.O.Kurlov.The staff is joined by very talented young people. Some have worked at the department since the first years of training. Nowadays there are young specialists: S.N.Krivolapov, A.A.Dedkova, E.E.Vassilchenko and S.N.Bocharov, D.I.Lebedev, M.S.Khlynin and others. During a short period of time they have mastered the most modern arrhythmological technologies and performed the whole range of diagnostic and complex interventional interferences on patients with different forms of cardiac arrhythmias. There are highly qualified nurses at the department.

At the modern stage in the world there has been the development of widely used modern electrophysiological laboratories that allow a doctor to manage all processes at EP study, run different ECS modes and give RF energy to an electrode with temperature control. Methods of non-fluoroscopic are being developed and improved cardiac mapping, explored the efficiency of arrhythmia treatment with the help of alternative methods of ablation, new electrode technique and other approaches. The great experience of treatment for different forms of tachycardias and arrhythmias with the help of high-tech intracardial interferences has been accumulated at the Bakulev Scientific Center of Cardiac Surgery, arrythmological clinics of Moscow, Tomsk, Novosibirsk, Krasnodar, Saint-Petersburg, Yekaterinburg, Samara and many other cities.

Annually the number of operations performed in Russia with the usage of RF energy is increasing. This was much assisted by 1998 creation of Federal Center of surgical and interventional arrhythmology (L.A.Bokeria, A.Sh.Revishvili) and regional arrhythmological centers and it allowed the significant improvement of the quality and increase of the size of specialized arrythmological assistance in different regions of our country.

Since 2016 the Research Institute for Cardiology has been the structural unit of the Tomsk National Research Medical Center of RAS.

The recent appearance of new technologies and possibilities of treatment for complex kinds of rhythm disorders allows rendering specialized arrhythmological assistance for a greater number of patients. The implementation into clinical practice of new, modern systems of non-invasion mapping methods, non-fluoroscopic navigation, automated ablation methods, usage of, except radio frequency energy, other means of influence over arrhythmogenic zones, allowed for not only the increase of the efficiency of treatment but also the reduced risk of complications among all groups of patients. Three employees of the department had training in European clinics with certificates obtained accordingly (S.N.Krivolapov, MS.Khlynin, S.U.Usenkov). In the period between 2010 and 2017, the department prepared specialists successfully working in arrhythmological and cardiosurgical centers of other Russian regions (Belgorod, Khabarovsk, Nizhny Novgorod, Vladivostok, Cheboksary) and CIS countries (Bishkek, Almaty, Astana, Tashkent).

Alongside with clinical success, the Siberian arrhythmological Center is actively engaged in scientific activity: participates in international research, develops medical technologies. During the last five years, at the Department of surgical treatment for complex rhythm disorders and electric cardiac pacing, there have been the performance and defence of 13 candidate` s and 5 doctoral theses, among these R.E.Batalov defended his doctoral thesis in 2017. The grant from President of Russia for the held research was received.

The progress in the development of methods of interventional arrhythmology in future will be related, first of all, to the inter-disciplinary cooperation of researchers, practitioners and developers of medical equipment. We are united by the desire to promote advanced medical technologies into wide clinical practice and it is one of the main conditions of our progress in arrhythmology.

SINCE FIRST CONGRESS - TOGETHER

Since very first CARDIOSTIM Congress the famous Petersburg Company INCART has taken party in it. It produces equipment for electrocardiography, exercise tolerance tests, Holter monitoring. And now this company is presented on boards and in the organization of scientific sections. We decided to ask some questions to its Director, Doctor of Medicine, Professor **V.M.Tikhonenko.**

- Viktor Mikhailovich, what is the origin of the name INCART"?

- In 1989, when the staff of the Leningrad Research Institute for Cardiology decided to produce Holter monitors and organized a small enterprise everyone insisted that the main focus should be not on production but on the development of new technical equipment, medical technologies, training, spread of knowledge. So the name "Institute of cardiological technics" was proposed but we were too shy to give such a "loud" name to a group of about fifteen people and registered the shortened name INCART. In 1994 when the company reregistered as the joint stock company, there had already been, some development of monitors and electric cardiographers. Organized doctors` training for Holter monitoring, was a working publishing office that issued, in particular, the All-Russian magazine "Bulletin of Arrhythmology". So the company was named "Institut kardiologicheskoy tekhniki" (Institute of cardiological technics) but the shortened name INCART was preserved.

- Behind You back there are hanging portraits of Academician V.A.Almazov and Professor L.V.Chireykin; are these people just Your teachers or they contributed specially into the establishment of INCART?

- My scientific supervisor Academician Vladimir Andreyevich Almazov and scientific consultant Professor Lev Veniaminovich Chireykin were the people of wide background and interests. As they say "A talented man is talented in everything". So they helped a lot in the establishment of the company and choice of right scientific trends.

I will give two examples. When I was young I supposed that Holter ECG monitors should analyze ECG and not some "rhythm variabilities" for which there should be special devices. L.V.Chireykin, in contrast, thought that additional analytical methods would widen the monitoring opportunities and insisted on his opinion - the "Cardiotekhnika-400" system started including the analyzing options of the heart rhythm variability and the assessment of ventricular late potentials. Of course, my teacher turned out to be right. Now modern qualitative Holter systems have the options of additional analysis beside the ones already mentioned, also include rhythm turbulence, T-wave microalternation, QT interval dynamics...

And separate devices disappeared in the past are almost never met. Because we heeded Lev Veniaminovich now “Kardiotekhnika” has all options.

One more fact. In 1995 I was addressed by Vladimir Andreyevich with a question - why does INCART produce only ECG monitors and not BP monitors which was becoming more and more popular? Was it a question of incapability? Of course I assured the academician that we could make them though I could not imagine how. Already in 1996 the monitor “Kardiotekhnika-400АД” appeared and not only did it copy foreign equivalence (there were no national ones at that time) but was constructed by the principle of “open systems” like Holler ECG monitors. That is, a doctor could “open” on the monitor and check any BP measurement and it dramatically increased the diagnostic possibilities as it became possible to make a conclusion on the basis of one BP measurement, for instance, during fainting or an attack of cardiac angina. This principle now lies on the basis of all BP monitors in the world and nobody believed that before 1996 all BP monitors had been “closed systems” - only measured BP numbers - “believe it or not”.

- Many companies produce Holter monitors with the record of two to three ECG leads and INCART - only 12 leads. Why?

- The absence of counterindications plays a bad joke on Holter monitoring allowing observation in the limited number of leads. In the 21st century You will not come across a stress system with the number of leads less than 12, the safety of research depends on it. If you miss, for instance, the SCG ischemic changes, you can receive severe complications. Holter monitoring does not have such problems and it is possible to save by using 7 electrodes for three leads but not 10 like for the registry of 12 leads. It is a tiny saving leading to the decrease of the diagnostic significance of research and additional difficulties for a doctor during deciphering a record. It is interesting that among arrhythmologists, monitoring with 12 leads turned out to be more in demand though, as it seems, two are enough to define arrhythmia. It is related to the planning of the surgical treatment of arrhythmia when it is very important to know multifocal arrhythmias. It cannot always be defined even by 12 leads but absolutely impossible by two or three.

I think monitors with 12 leads have the future. That is why INCART produces all monitors now, not only ECG but ECG and BP or ECG and breathing, only with 12 leads. Even the ultra small monitor for telemonitoring during many days and weeks has 12 ECG leads.

- Your company always participates in Congresses of somnologists and even at Cardiostim You make reports on apnea. What is the connection between and Holter and somnology?

- The connection is bilateral. On one side, without defining the connection of arrhythmias with stops in breathing it is possible to make a serious diagnostic mistake. For instance, by implanting a pacer for a patient whose asystole was caused by apnea (III class of indications).

More and more arrhythmologists come to the conclusion that before the implantation of a pacer it is necessary to define if the arrhythmia is connected to apnea, by running the combined ECG and breathing monitoring. Such a device was first produced in Russia by INCART in 2003. On the other side, when apnea is 10% spread in the population it is impossible to examine all these patients in the sleep laboratory. The combined ECG and breathing monitoring is widely spread in many departments of functional diagnostics of inpatient clinics and polyclinics, and with its help it is quite possible to hold the necessary number of checkups. Moreover, now already some companies produce ECG and breathing monitors. And the company INCART went on further when in 2011 it was first in the world to produce polyfunctional А фирма «ИНКАРТ» пошла дальше, выпустив в2011 году впервые в мире monitor of ECG, BP and breathing which is also getting spread in treatment institutions. It is necessary for differential diagnostics of symptomatic arterial hypertension related to apnea. In some years we will never be wrong in the differentiation of this hypertension and ordinary hypertonic disease.

- You are one of the few Company Directors having not technical but medical education and being Doctor of Medicine. Does it help You at work?

- Of course I do not understand enough in techniques and marketing but I am lucky to have wonderful experts as my deputies - expert in electronics A.U.Kormilitsyn, IT specialist I.V.Katkovnik, Marketing Director N.L.Chireykina. On my part, I speak with doctors who are the customers of our technical equipment, organize trainings, lectures, publications, scientific developments. My graduate students assist in making processing algorithms and our IT specialists assist them in statistical data processing. The old connection with medical organizations - the V.A.Almazov Center and the SPbSU Center for Cardiology which are our co-executors, allows the creation of the most advanced technologies and devices.

- Thank You for the conversation. One last question. You have participated in the work of our Congress for a long time and regularly. Why does it attract You?

- There are many doctors' forums including the annual Congress of our Russian Holter Society where I am Vice-President. But at most conferences there are doctors of narrow specialization or doctors from one Russian region. Only at Cardiostim there are specialists from all around Russia, from engineers to arrhythmologists, from functionalists to surgeons - it is impossible to miss such a significant event.

I hope we will be able to participate in this Congress for many and many years!

Aleksander Elinson: “All our developments are created together with doctors”

Aleksander Elinson,
General Director of the Company “Electron”

We still have a common opinion that “what is foreign is always better” and the technical equipment of Russian production cannot compete with foreign one. However, the situation changed long ago and dramatically. Russian companies specialized in medical equipment and IT solutions for healthcare have already created a wide range of products and started occupying a decent place not only at the Russian but also at foreign markets. One example is the Scientific manufacturing company “Electron”. Today “Bulletin of Cardiostim” is talking about the field, opportunities, problems and prospects of high scientific business to the Company` s General Director, member of General Board Presidium of All-Russian public organization “Business Russia”Aleksander Elinson.

- Aleksander, why did You decide to concentrate your efforts on the creation of diagnostic equipment and digitak technologies for healthcare?

- This is that happy case where life choses itself. And the choice was right. The thing is that almost thirty years ago the company “Electron” was founded by my father - an engineer from LOMO, from a dynasty of doctors, i.e. the synergy of two trends - technical and medical - was absolutely organic. During the perestroika everybody started searching for where to put efforts. As Father was related to the medical community he found out that doctor wanted to see on TV monitors the whole range of things that they saw by eye. That was how the first in the Soviet Union endoscopic camera was born. At that moment nobody new words like “innovation”, import replacement” and so on, it was not state policy - at that time, as Dad likes telling, “everyone just wanted to eat”, it was necessary to feed the family and express oneself somehow. First I, being a child and a teenager, observed everything, grew up in the company, as I can say. And in 1996 I understood I had observed - it was necessary to join the process and I did it. That was how and why why I came to medical history. And afterwards, as we travelled around the world a lot and saw how available the whole range of medical technologies was in developed countries we wanted to make sure that in Russia it would be possible to have the same available medical assistance as in Europe at the level of each region, each central and district hospital or polyclinic, and for that we needed available qualitative equipment which we develop and produce now. And, like many years ago, we still do it together with doctors.

- What is it, Company "Electron, like today? Can you describe it in brief?

- The leader in development and production. The widest line of products - equipment for X-ray surgery, X-ray diagnostics, computer tomography, nuclear medicine, ultrasound diagnostics. IT solutions for healthcare. The full cycle - in other words, we ourselves do research, analyze trends that can help us to understand prospective trends; then we develop, produce, promote and sell, train and provide service. The company managed to create and assembled the hole list of unique competencies.

- Is business complicated?

- Not easy. Capital intensive, with a lot of nuances. Judge by yourselves: any new development takes on average 2-3 years (before that for about a year - marketing study, analysis, collection of expert opinions and desires), then about a year to bring it to the market. Before any sales can start, about five years may have past. And during all this time the company must invest not only into the technology itself; creation of drafts, manufacturing samples and supply of production itself but, first of all, into human resources, salaries (for understanding: our development takes the third of the whole company staff). Bringing the product to the market also demands expenses for promotion.

We do not make all spare parts ourselves - they sometimes number thousands. No company, even a very large one, cannot afford to have thousands of productions of different specializations. So we have to solve a whole range of issues with suppliers, search for those who are able to do what is necessary, with steady quality and for reasonable price. This is the reason the business of all world giants is organized.

In this relation we are much assisted by the fact that development is one of our key competencies. That is why our technical assignment also includes detailed drafts and the clear understanding of what is necessary, what the demands and limits of a spare part ordered are.

Besides, today our sales are in "pure market" and each customer wants something for himself, a bit different; and when you produce a small number of identical devices because requirements by each procedure differ from each other, nobody says it is easy. If we take some ideal working models, there have been such periods in our life when the state made an order in a large amount and it was clear that the company had to produce the large number of identical products by the reasonable schedule. But, nevertheless, we try to solve all these issues, build the efficient system, have made it with the decent system of quality management which meets not only Russian but also European and American standards.

- What is your motivation then if it is so difficult?

- No, it is not easy. But interesting. And joyful. When, for instance, a famous cardiosurgeon performs an operation on your apparatus and exclaims: "A wonderful, amazing picture, you cannot always see this on the most advanced equipment", you understand that everything is right, that you do something very necessary and important. And for our whole company we take pride in such moments (though, believe me, they are not rare). But what pleases is the fact that the people do not get spoilt or relaxed.

When you enter such high scientific business as medical machine construction it is very important that the devices you make "understand" the needs that doctors have. And not always a doctor can directly explain by technical language what is necessary for him. He understands what he needs, for instance, is that he would be comfortable, would not stumble on wires, everything would ride by itself, that he could easily get those images that are necessary for diagnostic purposes... there may be some completely new idea even at the level of sensations and suggestions when there is nothing you can compare it to.

For instance, our C-curves would not exist without doctors either. We made the first one in the distant 1993 with **Professor Dmitry Fedorovich Yegorov** who, by the way, is one of the initiators and inspirers of Cardiostim. And today it is already a whole line of X-ray surgical mobile systems that have the widest appliance: from orthopedics and traumatology to vascular surgery, cardiac surgery, EP study. Or our universal X-ray diagnostic polypositional complex... Three volumes of analytics before the launch of the development, a large pool of expert doctors. Even the word "polypositional" in the name appeared due to the doctors: that was how Professor **Viktor Yevgenyevich Savello** described this apparatus when he came to look at the result of joint creative work of doctors and engineers. From the latest - with the G.I,.Turner Institute we developed a completely new unique apparatus for traumatology and orthopedics. It just happened that doctors who clearly understand the problems they have to solve for qualitative diagnostics, spoke about it.

- It is clear about the equipment. And is it the same in information technologies? Now they speak a lot about the digitalization of health system, it is one of the key moments in the strategy of the development of the health care system. Do you think it can really assist so that the field should start working more efficiently?

- Of course! I can reply with one word to all questions.

If you create a particular specific IT solutions for a particular topical area, specific tasks, who should help you? Of course who will use them then. IT cannot, should not, and don` t have any right to live by its own detached life, they have to “understand” and take into account existing or future processes. And it means that these very processes should be known to a developer and he should realize them fully!

Here I recall the advertisement: Not all yogurts are equally useful”.

Today already there a whole range of regions which use it very efficiently. For instance, in Saint-Petersburg some years ago a project was launched on the creation of mammological screening including the “second” distant reading by the expert center of all women` s tests within this project. And we were realizing it technically at that time. Result: the detectability of breast cancer at early stages increased by more than 2% and the potential budget saving a year constitutes about 200 million roubles. And these are not just statistics, these are lives, somebody` s mothers, daughters, grandmothers... These may be potential Marie Curies and Sofia Kovalevskayas.

- So You want to say that any doctor who has scientific ambitions, a prospective idea targeted at the solution of particular problems in medicine, can apply to your company with proposals? Now many people complain that earlier, almost in the Soviet times, the Ministry of Healthcare had a special medical technical Commission , a doctor could file an application with the idea of a new development and, in case of approval, then this application was discussed at the Industry Council and launched into production. And today there is nothing...

- Quite so. Obviously we will study this proposal, assess the market, our technical and investment capabilities and it is understandable, otherwise it is irresponsible. But this is an opportunity. That is why with Cardiostim and within the jubilee Congress we announce contest for the collection of ideas. We tried to maximally relieve the conditions of this stage - potential authors should fill in a small questionnaire for further interaction and, in case we wish, - communicate or get consulted by our engineers who will be present at the “Electron” stand during all Congress days.

- How would You describe the success formula of a developing company?

- In my opinion, the main thing is not to be presumptuous, not to calm down, not to lose interest, “light in the eyes”, be able to listen and take heed.

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