

# The case of the peculiarities of electrophysiological examination (EFI) and radiofrequency ablation (RFA) in the atypical form of atrioventricular nodular reciprocal tachycardia (ANRT).

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**Annotation.** Atrioventricular nodular reciprocal tachycardia is determined by the presence of a reentry mechanism in the zone of the AV node. The AV node has a three-dimensional structure and weak connections in the slot contacts due to the differentiated expression of connexin isoforms. These conditions cause the formation of nodal reciprocal tachycardia [1,2,3]. There is also histological and electrophysiological evidence that the lower right and left extensions of the human AV node and the atrioventricular messages they provide can become an anatomical substrate for slow AV conduction [4]. Ablation of AV nodular reciprocal tachycardia ranks second in frequency among all catheter interventions [5]. ANRT is more common in women than in men [6].

**Keywords:** Atrioventricular nodular reciprocal tachycardia, additional atrioventricular junction, electrophysiological examination, radiofrequency ablation, blockade of the right leg of the His bundle, blockade of the left leg of the His bundle, cycle duration (tachycardia cycle)

**Introduction.** Atypical ANRT accounts for 6% of all cases of ANRT (7). (In our Samarkand regional branch of the Russian National Center of Cardiology, the atypical form of ANRT is detected in only 3.2% of cases), and in some patients it can coexist with the typical one [8]. In the so-called fast-slow forms of ANRT, retrograde activation of the atria begins much later than ventricular a complex with an AN/NA ratio  $<1$ , which indicates that retrograde conductivity is slower than antegrade. AN interval  $<185-200$  ms, interval VA  $>60$  ms. The earliest retrograde activation of the atria is usually recorded at the base of the Koch triangle, near the mouth of the coronary sinus, but it can be variable and originate from the lower part of the septum or distal part of the coronary sinus [6,7,8]. In slow-slow ANRT forms, the AN/NA ratio is  $>1$ , the AN interval is  $>200$  ms, and the VA interval is  $>60$  ms, which indicates that slow AV paths are used for both ante- and retrograde conduction. The earliest activation often occurs in the coronary sinus, however, there are reports of left-sided retrograde atrial activations [9,10,11].

The aim is to study the features of EFI in a patient with an atypical form of AVRT.

**Materials and methods of research.** The analysis of cases of patients visited at the inpatient reception at the Republican specialized scientific and practical center Cardiology of the Samarkand branch on 16.07.22 was carried out. Electrocardiographic examination was carried out on the device –Heart Screen at rest at 25 mm \ s Holter monitoring was carried out on the device- Contec on 3-channel mode. Echo cardiographic examination on the Electrophysiological Examination (EFI) and radiofrequency ablation (RF) at the station – Microport(Columbus).

**Research results and discussion.** The patient, born in 1988, applied to the hospital Republican specialized scientific and practical center Cardiology Samarkand branch) Arhythmological history of 5-6 years. During the last 2 years, the tachycardia attack has become frequent, according to the patient, at the time of the attack, the heart rate rises to 200 beats / min (but registered) and lasts about 20 minutes. The patient does not take anything on his own. The attack is stopped independently Due to a frequent attack, the patient is hospitalized. On examination: the patient's condition is of moderate severity, the skin is of normal color. There are no peripheral edema. The turgor of the skin is preserved. Subcutaneous fat is moderately developed. Percussion over the lungs is a clear pulmonary sound. Respiration in the lungs is vesicular, there is no wheezing BDD 16-17 in min. The area of the heart is not changed. The limits of relative stupidity are normal. The activity of the heart is rhythmic, the heart rate is 70-75 beats \ min. Blood pressure 120/80 mmHg. The abdomen is soft, painless. The liver and spleen are not enlarged. The symptom of pounding is negative. On the ECG, the sinus rhythm heart rate is 87 beats / min, the EOS is deviated to the left In the hospital, the patient underwent general clinical analyses, Holter monitoring (DHM), Electrocardiography (ECG), Echocardiography (Echo-KG), With XM revealed: the basic sinus rhythm, mainly normosystole. All rhythms 88907 heart rate (beats / min) average-86; minimum-51; maximum-132. The response to the load is adequate. Conduction disturbances were not registered. There are no pauses. High-frequency tachycardia paroxysms have not been registered. VE is only 27. NVE is only 11. The intervals "QT" " PR" are within the norms. Segment "ST" diagnostic no significant changes were registered. On EchoCG, the left atrium is 36 mm, CDS is 5.5, CSS is 3.9, CDV is 148 ml, ejection fraction(EV) is 55%, the aorta is ascending 34 mm, departs from the left ventricle, the aortic valve flaps are sealed, movable, the fibrous ring (FR) is -30, the pressure gradient is peak -6. Mitral valve-flaps compacted, movable, FR-33, area MV-4,5, pressure gradient peak-2,5. RV-not expanded, LA-24, ring TV-36. INTERVENTRICULAR SEPTUM,-9 mm, INTERATRIAL SEPTUM and INTERVENTRICULAR SEPTUM, intact. There is no pericardial effusion. The patient was consulted by an arrhythmologist, electrophysiological studies (EFI) and radiofrequency ablation (RF) were recommended.The patient was taken to the X-ray room at a sinus rhythm with a heart rate of 70-72 beats /1'. The right femoral is punctured twice under local anesthesia. Electrodes were carried out: a 10-pole in the CS, and a 10-pole controlled in the area of the Gis/PG. When stimulating the pancreas – conducting GPS. IC at 480 ms retrograde jump in the interval, IC at 360 again retrograde fast, GPS ARP 240 ms. When the mouth of the CS is stimulated for 260 ms, the gap of the A-H interval for 80 ms is induced over ventricular tachycardia (LVT) with CD 290 ms. During tachycardia with retrograde stimulation with CD 270 ms, A-A interval was 290 ms, the poststimulation complex begins as VAV and the poststimulation interval was 460 ms. Early retrograde atrial activation in the Gis zone. Tachycardia is stopped with frequent antegrade stimulation. With retrograde stimulation from the apex and basal part of the right ventricle, the VA interval is 110 and 150 ms, respectively. Paragisial stimulation denies the presence of these ADDITIONAL ATRIOVENTRICULAR JUNCTION. With frequent antegrade stimulation, the induction of LVT is repeated, but this time at long VA-AV intervals, CD 320 ms. Next, atropine 0.5 ml was introduced. After a pharmacological test with frequent antegrade stimulation, the induction of LVT. At the moment of tachycardia, BLLGB (blockade of the left leg of the Gis beam) appeared, which passes to BRLGB (blockade of the right leg of the Gis beam), while the CD tachycardia was 280 ms – the cycle does not change. Tachycardia is stopped independently. At the end of tachycardia, there is a shortening of the AV and an extension of the VA interval, then the VA shortens, while the CD of tachycardia was 280 ms. The picture was evaluated as an ANRT by the slow-fast, slow-slow mechanism, the 10-pole electrode was replaced with a convection one, conducted to the area of slow AV connection paths, where several RF effects were performed with the development of a slow nodal rhythm at a temperature of 54-56 ° C and a power of 45-50 watts. Tachycardia is not induced immediately after RF with frequent stimulation. After 15 minutes of

observation, the parameters are the same. Tachycardia is not induced by frequent over-frequent and programmed stimulation. ARP AV (absolute refractory period of the AV node) 280 ms. WAP (Wenkebach antegrade point) 340 ms. Atropine 0.5 ml was injected. After a pharmacological test of ATV-280 ms, ARP AV-240 ms, tachycardia is not induced. The procedure is completed. The RF time is 2 minutes, Decanulation, hemostasis, aseptic dressings at the puncture sites. The patient with sinus rhythm was transferred to the department.

**Conclusion:** Double ways of AV-conducting. The typical and atypical form of ANRT by the slow-fast slow-slow CD mechanism is 280-320 ms. After the operation, the diagnosis was made: Double ways of AV-conduction. The typical and atypical form of ANRT by the slow-fast slow-slow, fast-slow mechanism with a CD of 280-290-320 ms. The postoperative period proceeds without peculiarities. No rhythm disturbances were observed.

**Acknowledgement.** The atypical form of ANRT in practice is very rare. For diagnosis requires a special ETHER. RFA is an effective treatment method.

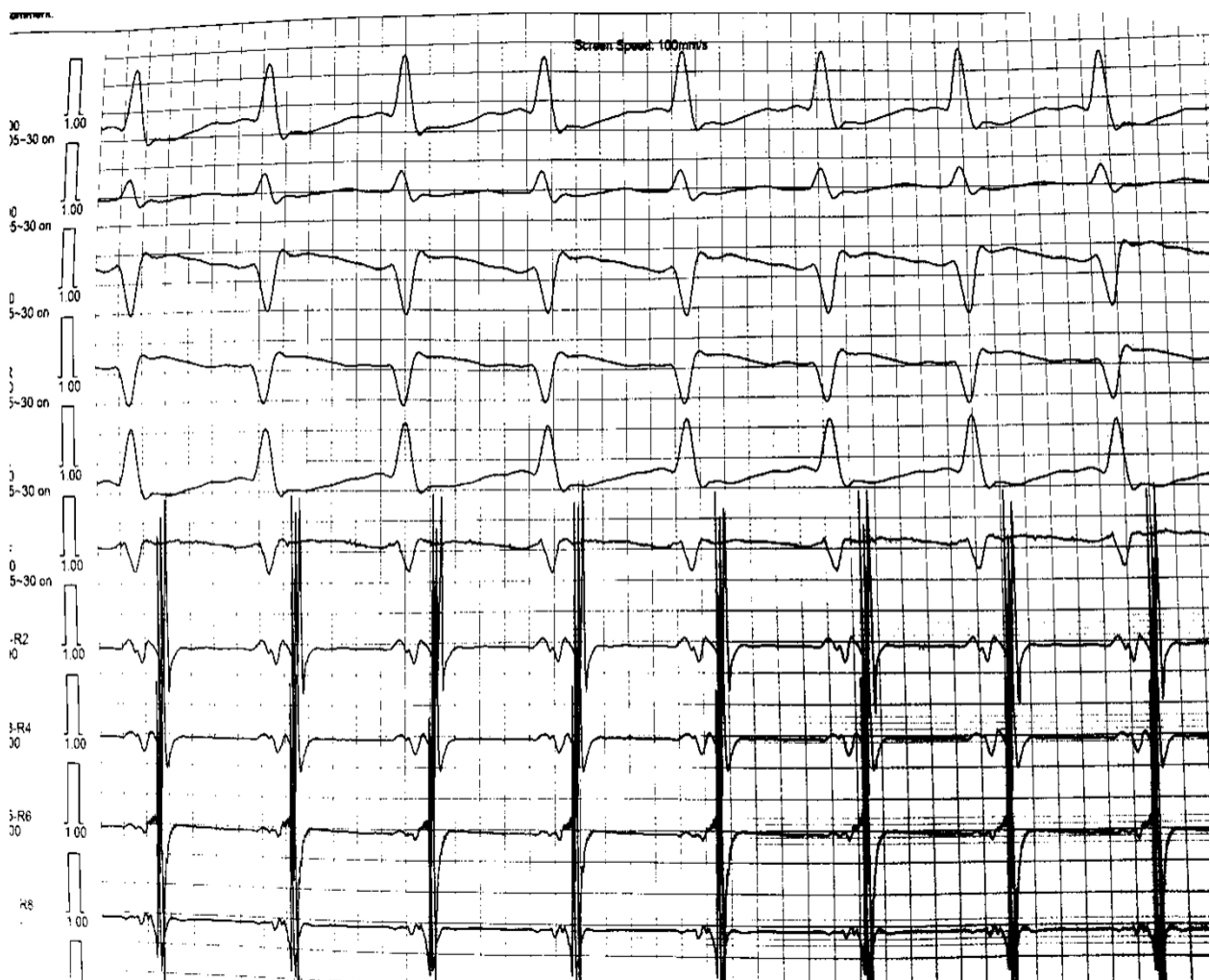


Figure 1-the 1st ANRT on the slow-fast mechanism.

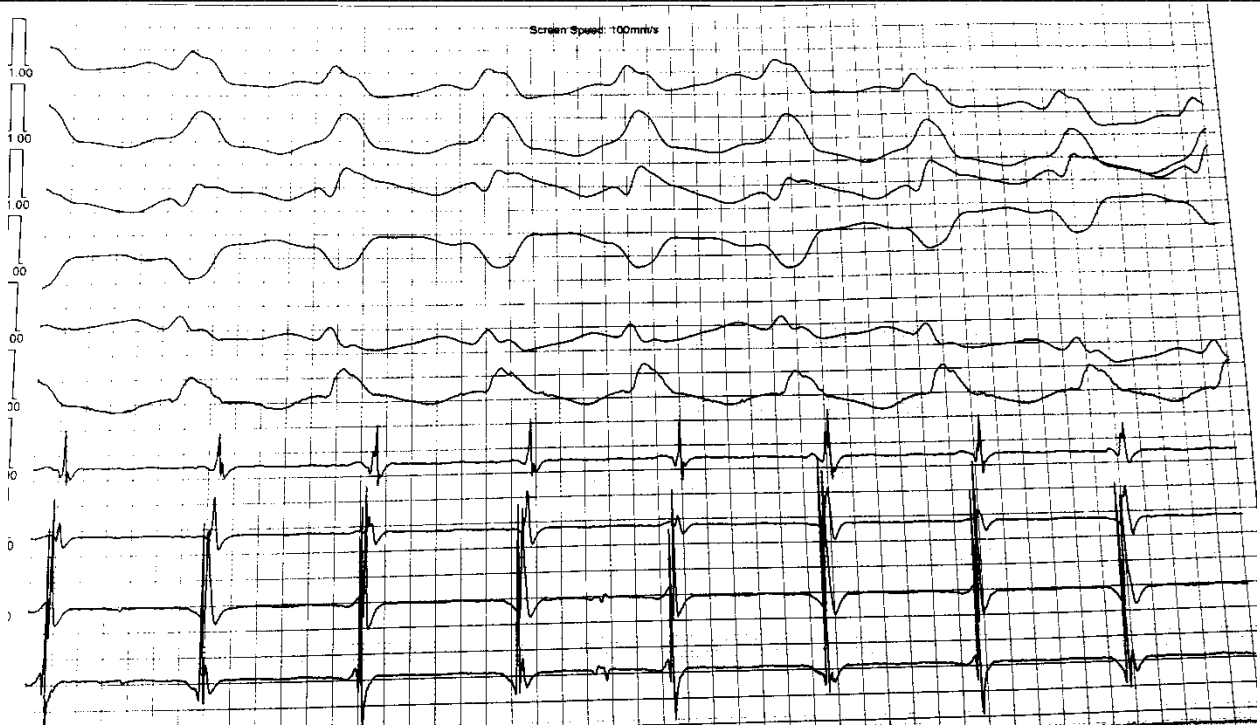


Figure 2. Atrioventricular nodular reciprocal tachycardia by slow-fast mechanism with complete blockade of the left leg of the bundle branches.



Figure 3. The phenomenon of "jump" with the induction of ANRT. Immediately after induction, there is a blockade of the left leg of the bundle branches, while the cycle does not change.

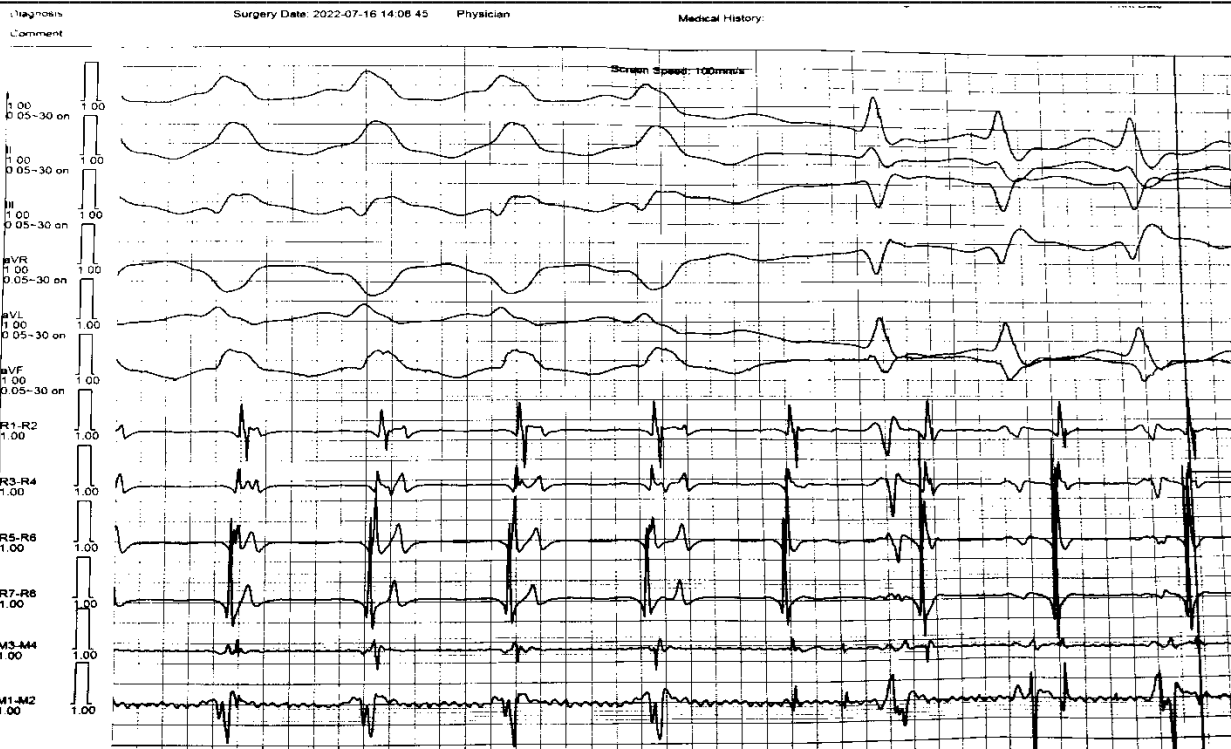


Figure 4. During tachycardia, the blockade of the left leg of the Gis beam occurs, which passes to the blockade of the right leg of the Gis beam, while the cycle does not change.



Figure 5. ANRT by the slow-slow mechanism



Figure 6-th ANRT according to the slow-slow mechanism, During tachycardia, a blockade of the right leg of the beam occurs, while the H-V interval is lengthened.

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