

Clinical characteristics of the cardiovascular system involvement in various variants of ankylosing spondylitis

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Annotation: Inflammatory and degenerative spinal diseases are one of the pressing problems of modern rheumatology due to the high prevalence, frequent incidence of diseases of young and middle-aged men, frequent lesions of internal organs, early disability of patients, socio-economic damage caused to the patient and society [1].

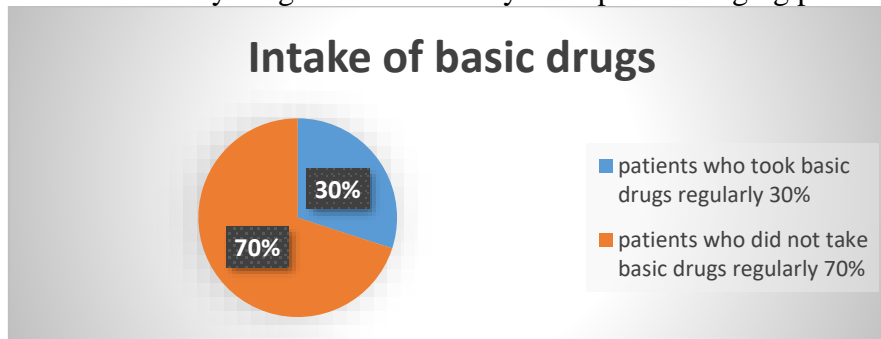
Since 1892, when V.M.Bekhterev described the main clinical manifestations of the disease and suggested that it should be singled out as a separate nosological form, researchers from the leading countries of the world have achieved certain success in studying its nature, mechanisms of development, as well as treatment and rehabilitation of patients. Nevertheless, ankylosing spondylitis (AC), which is regarded as a disease of the musculoskeletal apparatus, affecting mainly young men, remains one of the leading socio-economic problems of our time, leading to disability in working age.

Keywords: relative wall thinness, diastolic interventricular septum, eccentric hypertrophy, diastolic pressure, resistance index, linear blood flow velocity.

Introduction

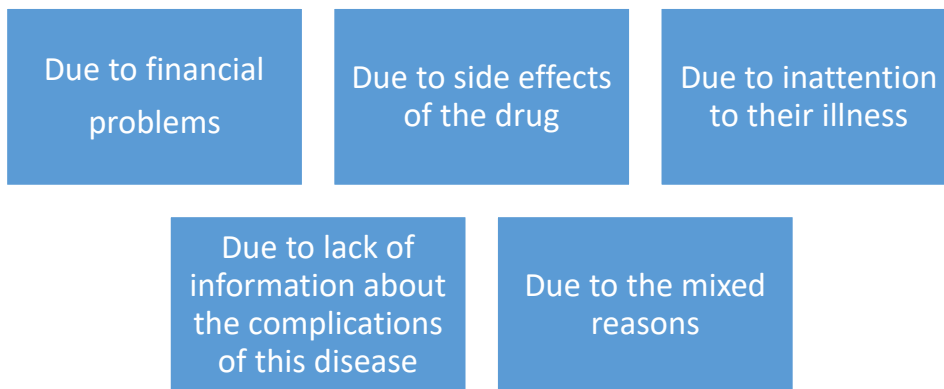
In the 55 examined patients with AS, the clinical features of the course of AS were studied.

According to the results of the analysis, it has been found out, that only 30% of patients took basic drugs on a regular basis. And 70% of patients for various reasons did not take basic drugs on a regular basis. And non-steroidal anti-inflammatory drugs were taken only to stop the emerging pain.

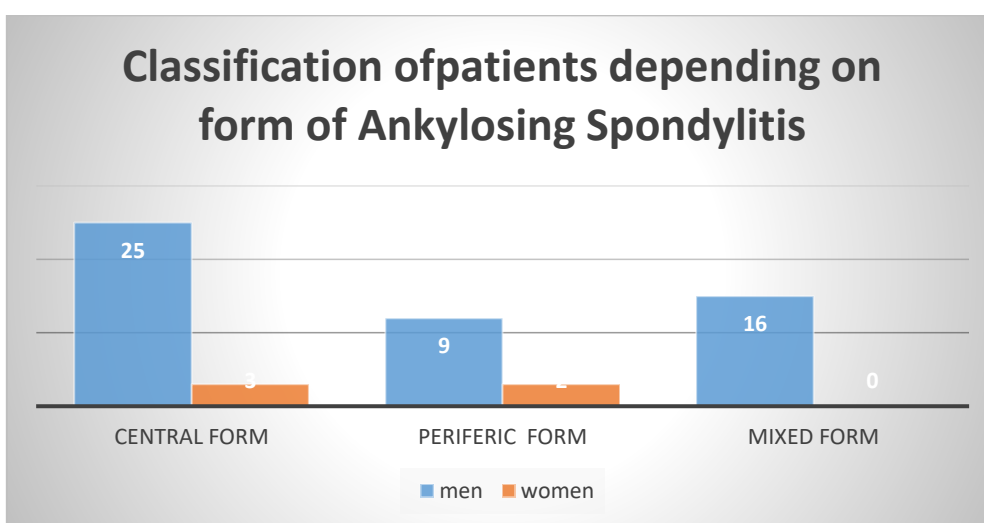


Patients who did not take basic drugs on a regular basis differently explained the reason for not using: 1) for financial reasons; 2) to side effects of the drug; 3) to inattention to his illness; 4) to lack of information about the complications of this disease; 5) for the aforementioned mixed reasons.

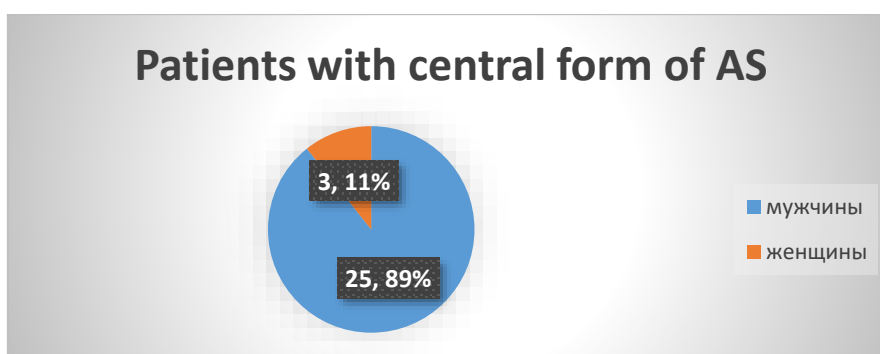
MISCELLANEOUS REASONS FOR NOT USING MEDICINES BY PATIENTS



All patients were evaluated for the form of the disease depending on the location of the spine and joints pathology. Patients with AS were classified into the central, peripheral and mixed forms of AS.



A total of 28 (51%) patients had a central form of AS. Of these, 25 are men and 3 are women.



The peripheral form of AS was observed in 11 (20%) patients. Of these, 9 are men and 2 are women.

A mixed form of AS was observed in 16 (29%). The incidence of women with this form of the disease was not observed.

Patients with AS for the duration of the disease were divided: up to 1 year, from 1 to 5 years, from 5 to 10 years, more than 10 years.

Table 1 Characteristics of patients with ankylosing spondyloarthritis by duration of disease

№/	Duration of disease	men		women		total	
		abs	%	Abs	%	abs	%

1	Up to 1 year	1	1,8%	-	-	1	1,8%
2	1-5 yy	12	21,8 %	3	5,4 %	15	27,2%
3	5-10 yy	12	21,8%	-	-	12	21,8 %
4	More than 10 years	24	43,6%	3	5,4%	27	49%
Total		49	89 %	6	10,8%	55	100%

In the examined population, patients with disease duration of more than 10 years made up the largest group (49%), second place was taken by patients with AS with a disease duration of 1 year to 5 years (27.2%). If taken as a whole up to 5 years - this indicator was 29%. Among women, patients with disease duration of 5 to 10 years and more than 10 years were the same, and among men, patients with a history of more than 10 years were prevailing.

In the study of the patient's functional capabilities for functional insufficiency of the joints (FIJ), the following was noted according to table 2.6.

Table 2

Characterization of patients with ankylosing spondylitis in terms of functional insufficiency of the joint

№/ №	FIJ level	women		men		Total	
		abs	%	abs	%	abs	%
1	FIJ I	-	-	-	-	-	-
2	FIJ II	1	1,8%	40	72,7%	41	74,5%
3	FIJ III	5	9%	9	16,3%	14	25,4 %
Total		6	9,8%	49	89%	55	100%

As it can be seen from the presented table, among the surveyed 55 patients of the AS there prevailed the patients with FIJ of the II degree - those who lost their professional abilities.

It is known that degree of FIJ in AS is determined mainly by the degree of radiological changes in the joints in general (table 2).

It has been established that in the early stage of AS - up to 1 year X-ray examination of the joints may not reveal initial changes from the affected joints.

Table 3

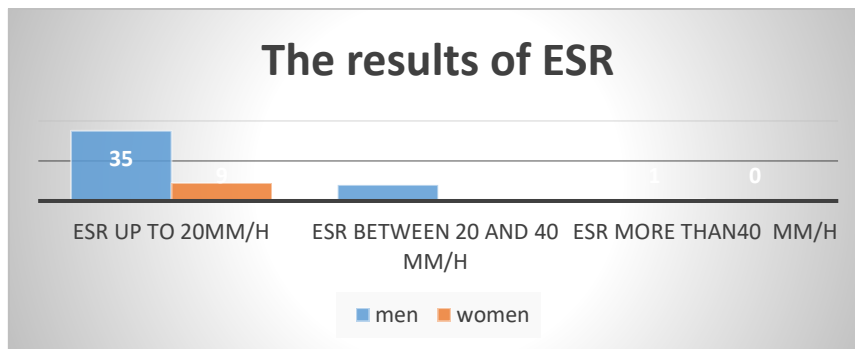
Characterization of radiological joint changes in the examined patients with ankylosing spondyloarthritis

№/ №	Radiological changes stage	women		men		total	
		abs	%	abs	%	abs	%
1	I	-	-	1	1,8%	1	1,8 %
2	I-II	-	-	-	-	-	-
3	II	3	5,6 %	3	66,0%	38	71,7 %
4	II-III	1	1,8%	1	1,8%	2	3,7 %
5	III	1	1,8 %	6	11,3 %	7	13,2%
6	III-IV	1	1,8%	4	7,5 %	5	9,4 %
Total		6	11,6%	49	88,4 %	55	100%

More than a half of the examined patients (66.0%) had radiological changes of stage II, which is also due to the specificity, prevalence with a shorter duration of AS. Also stage III radiological changes were equally prevalent in women and men. X-rays of III and IV stages were registered only in 9.4% of patients with AS.

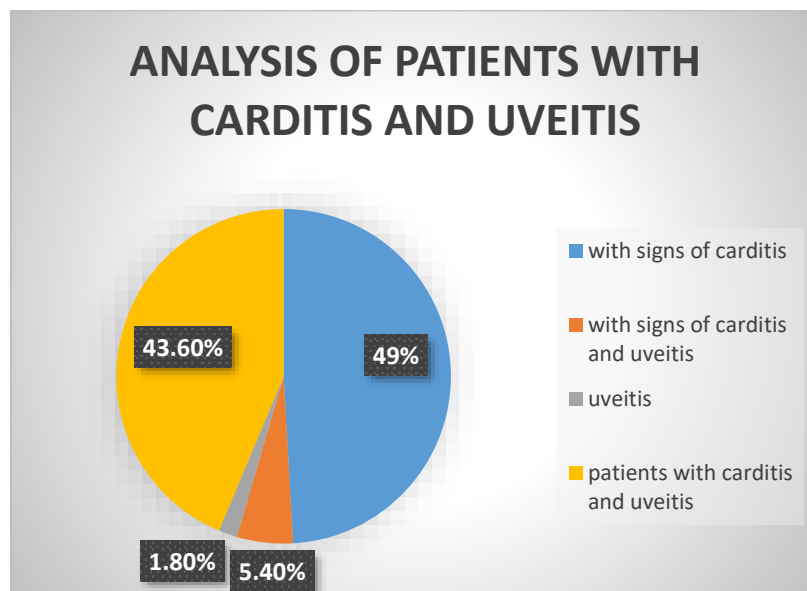
This, background indicators of the examined population of patients with AS corresponded to earlier (initial) changes of morphological and structural character.

The disease activity in terms of ESR was in the following order: in 46 (83.6%) patients - ESR was lower than 20 mm / hour, in 8 (14.5%) patients - ESR was observed in the range of 20-40 mm / hour, and only in one (2%) patient - the ESR was more than 40 mm / hour.



In analysis of C-reactive protein (CRP) in the blood plasma of patients with AS, it was found that in no patient was CRP at normal concentrations. In 41,3% of patients there was a twofold increase, and in 41,3% of patients there was a three-fold increase in the concentration of CRP, and in 17,3% of patients there was a fourfold increase in the concentration of CRP.

The following data were obtained during the analysis of the systemic nature of the lesion in AC patients: 27 (49%) patients had the signs of carditis, 3 (5%) patients had the signs of carditis and uveitis, and only one patient (1.8%) had uveitis. No uveitis was observed in women.

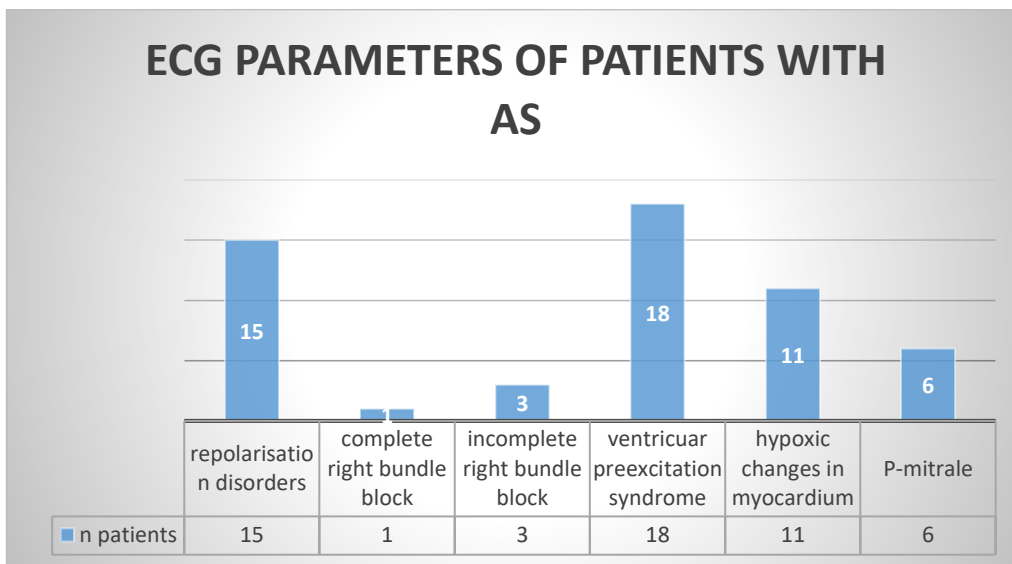


Blood pressure (BP) and pulse of patients with AS were studied 2 times a day. The mean systolic blood pressure was 123.0 mmHg (126.7 mmHg for men and 119.3 mmHg for women) and the average diastolic blood pressure was 79.3 mmHg (for men 79 , 7 Hg, and for women 78.6 mm Hg).

In the analysis of systolic BP by gradation, it was found that 8 patients had SBP values between 140-160 mmHg, 31 patients had SBP values between 120-139 mmHg, 5 patients had SBP values between 110-

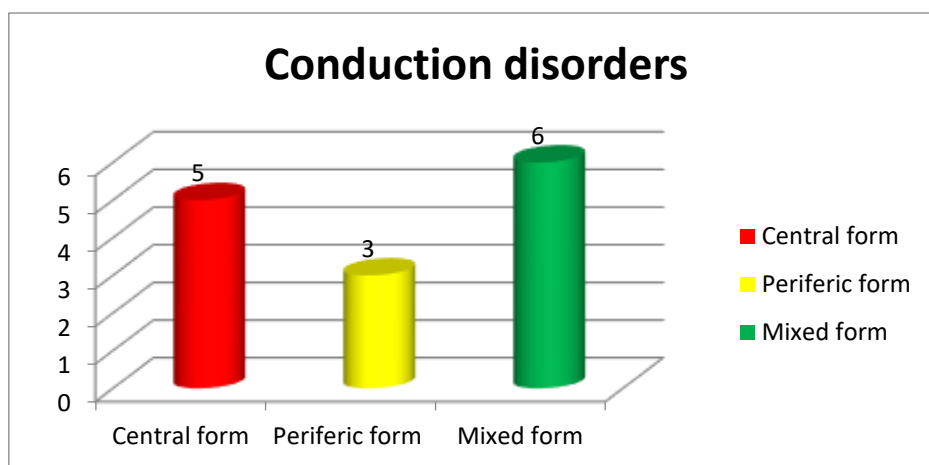
119 mmHg, and 11 patients had SBP values below 100 mmHg. The arithmetic mean value of the pulse of patients with AS was 82.1 beats per min, which indicates tachycardia, i.e. indicates the presence of heart damage.

An ECG study showed the following changes: 15 patients had repolarization disturbances in the posterior wall of the left ventricle, one patient had complete blockade of the right bundle, 3 patients had an incomplete blockade of the right bundle, 18 patients had a preexcitation syndrome, 11 patients had hypoxic changes in the myocardium, 6 patients had P-mitrale. Only 2 patients did not have any pathological changes on the ECG.

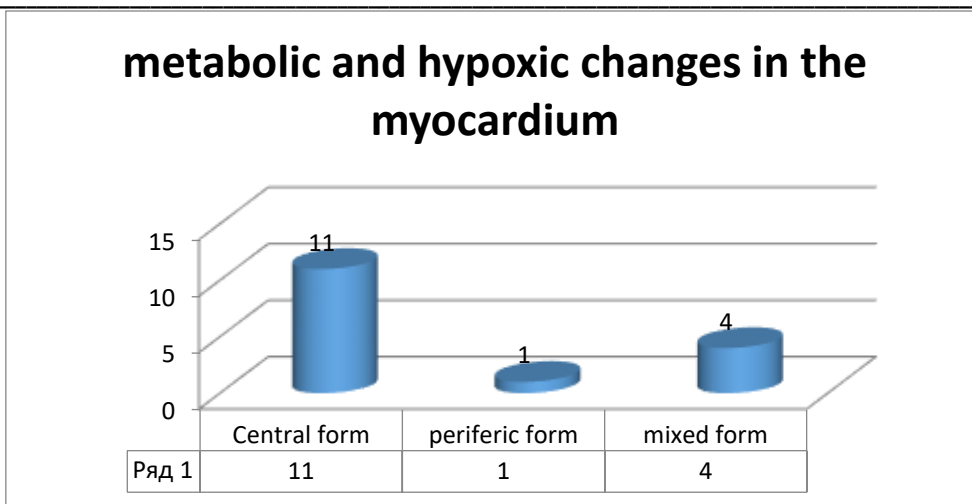


When comparing the obtained electrocardiographic data with the duration of the disease, the following data were obtained: repolarization disorders in the posterior wall of the left ventricle were observed in patients with AS disease duration of 13.5 years on average, complete blockade of the right bundle - 12.5 years, incomplete blockade - 4 years, the preexcitation syndrome of 8.7 years, hypoxic changes in the myocardium of 11.9 years.

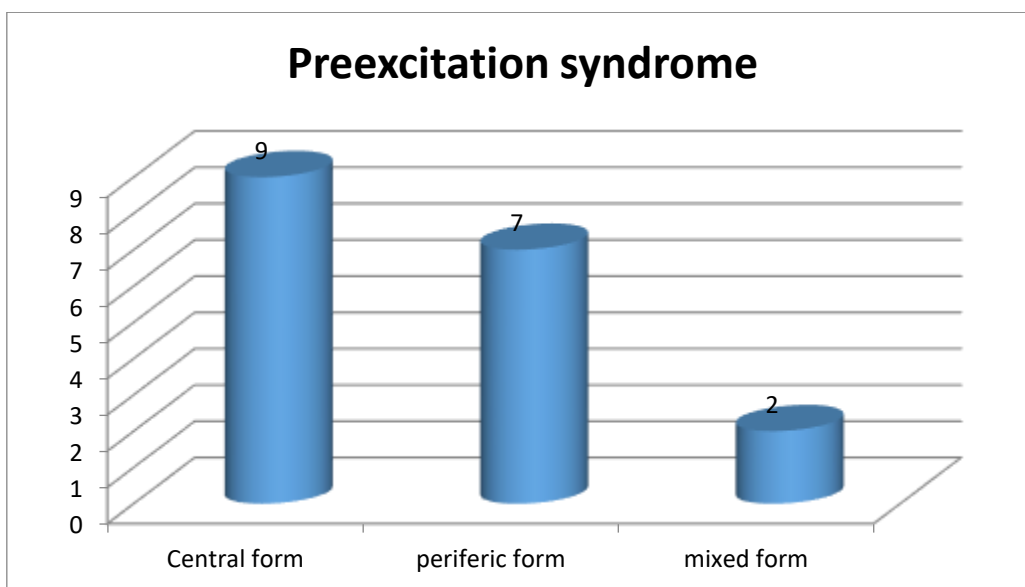
When comparing the results of electrocardiographic studies with the form of the disease, the following results were obtained:



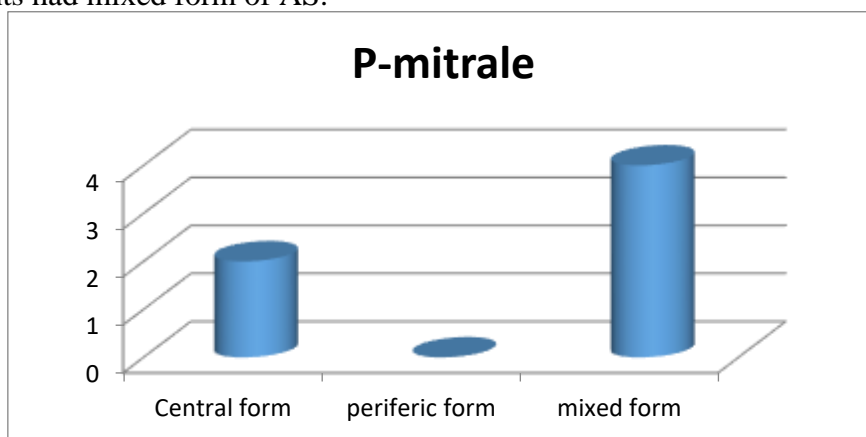
Conduction disorders (difficulty or deceleration of AV conduction, complete blockade or incomplete blockade of the bundle) were observed in only 14 patients. Of these, 5 patients suffered from a central form of AS, 3 from a peripheral form of AS, and 6 patients had a mixed form of AS.



In analysis of the number of metabolic and hypoxic changes, were noted the following results: 11 patients (20%) with hypoxic and metabolic changes in the myocardium had a central form of AS, 1 (1.8%) of the patient had a peripheral form of AS and 4 (7.2%) of the patients had a mixed form of AS.

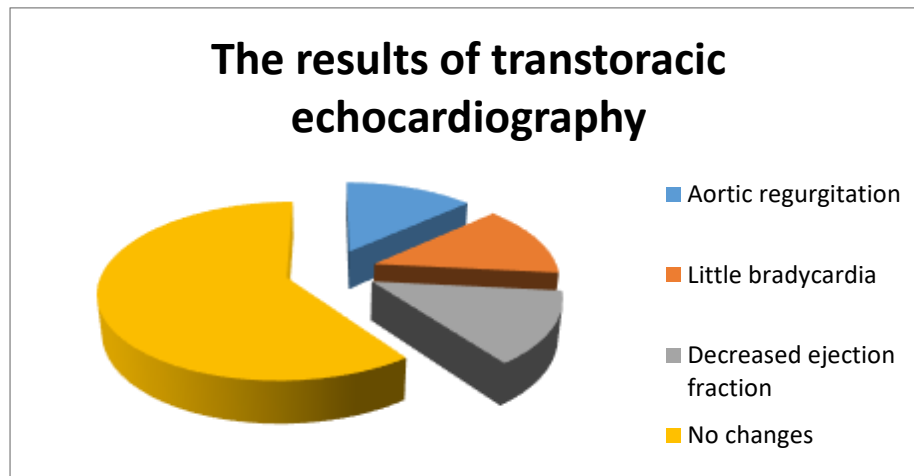


During the analysis of the electrocardiographic signs of the preexcitation syndrome , it was found that 9 patients with signs of preexcitation syndrome had a central form of AS, 7 patients had peripheral form of the disease and 2 patients had mixed form of AS.



P-mitrale was observed in 6 patients, of which: 2 patients had a central form of AS and 4 patients had a peripheral form AS.

The following changes were observed on transthoracic echocardiography: aortic regurgitation was observed in 13.3% of patients, slight bradycardia was observed in 13.3% of patients, the ejection fraction decreased and no changes were observed in 60% of patients on echocardiography.



So, in the study of the cardiovascular system in 55 patients with AS it was found that not all patients took non-steroidal anti-inflammatory and basic drugs on a regular basis, for various reasons, which exacerbates the inflammatory process in the body.

In analysis of the disease form according to the level of damage to the spinal column and joints, it was noted that more than half of the patients have a central form of the disease. This indicates the highest prevalence of the central form of AS among the Uzbek population. And analysis by the duration of the disease, showed that the majority of patients (49%) were patients with a morbidity anamnesis of more than 10 years, which is important in assessing cardiovascular lesions by the duration of the disease. If we take into account that among the examined patients there were predominantly young people, we can once again see the social significance of AS.

The degree of disability in AS patients by gender practically did not differ.

Other parameters showing the activity of the disease (ESR and CRP) and the degree of damage to the spine and sacroileal articulation (X-ray of the spine and pelvic bones) also provided information about the moderate activity of the disease.

Blood pressure and pulse of patients also tended to increase, which once again indicates damage to the cardiovascular system.

An ECG analysis of patients with AS showed that only 3.6% of patients had no pathology on the ECG. And the rest of the patients (96.3%) had blockades of various degrees, extrasystoles, arrhythmias, hypoxic changes and repolarization disorders. ECG data provided invaluable information on the heart health status of patients with AS. When comparing the ECG findings of patients with AS with the duration of the disease, it found out that in patients with a history of more than 10 years, ECG changes were observed: disturbances in repolarization processes in the posterior wall of the left ventricle, complete blockade of the right bundle, hypoxic changes in the myocardium. In the analysis of ECG changes depending on the form of the disease it was noted that the majority of patients with: conduction disorders, metabolic and hypoxic changes in myocardium had a central form of disease. The greatest number of patients with P-mitrale were patients with peripheral form of AS. The number of patients having central and peripheral form with the syndrome of premature ventricular repolarization was almost the same.

According to transthoracic echocardiography, the majority (60%) of the examined patients had no pathology. The remaining patients had: aortic regurgitation, slight bradycardia and a decrease in ejection fraction.

Although valuable information was obtained during the study, this study has many limitations: firstly, a small number of patients participated in the study; secondly, not all patients used drugs on a regular basis, which can lead to distortion of the results.

The specificity of this study is a comparison of the results with the duration and form of the disease, which is difficult to find in other studies.

A lot of scientists wrote about the involvement of the cardiovascular system in AS. One of the primary pathological explanations for valvular pathology in AS was given by Bulkley and Roberts when they studied autopsy materials of 8 AS patients, according to their aortic root expansion due to fibrous growths along the intima [7]. In deeper studies, it was observed that cellular inflammatory process, which leads to endarteritis of the aortic root and valves and which is supported by platelet aggregation, leads to thickening of the tissue, as well as to aortic valve insufficiency due to stimulation of fibroblastic hyperactivities [8,9]. In their study, Roldan et al [9] examined the aortic root and valves using transthoracic echocardiography (TTE) in patients with AS and found root and valve pathologies in 82% of patients with AS compared with the control group.

Involvement of the heart in the form of impaired conduction or aortic insufficiency was found in 5-10% of patients with AS [10,11]. Disorders of conductivity may initially be periodic, but eventually becomes constant [12]. In his research Diket al. A statistically significant high prevalence of AS patients with first-degree AV blockade was determined, as well as the relationship of this type of blockade with the duration of disease activity [10]. A. Yildirir et al. demonstrated that calculating the dispersion of Q-T on an ECG provides valuable information about the possible development of arrhythmia [14]. Thus, patients with an increased risk of arrhythmias may be referred for a more detailed examination to assess cardiac signs of rheumatic disease [15].

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