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EFFICIENCY OF TRAINING PROGRAMS AIMED AT ANKYLOSING SPONDYLITIS EARLY DETECTION FOR PRIMARY CARE DOCTORS IN KAZAN

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Abstract:

In practice, the average time difference between a diacrisis of ankylosing spondylitis and the onset of the disease is 7-8 years. Training programs for primary care doctors can accelerate the diagnosis of the disease. The work on the compilation of training programs and the evaluation of their efficiency was carried out in 3 (three) stages: 1) assessment of the level of knowledge and problems regarding ankylosing spondylitis diagnostics and treatment among general practice doctors and neurologists; 2) development of training programs, suitable for use in actual clinical practice; 3) analysis of the programs' implementation efficiency in accordance with the Kazan Rheumatology Center work statements in 2009-2011. The knowledge of 130 doctors (rheumatologists, neurologists and primary care doctors) regarding the criteria of differential diagnostics, back pain and inflammatory back pain was tested. Rheumatologists were tested separately, in order to determine the validity of questions.

Basic findings: After the conduction of training, the number of ankylosing spondylitis carriers at the Kazan State Rheumatology Center increased almost twofold, from 378 in 2009 to 683 in 2011, while the diagnosis duration reduced from 8.4 years to 3.5 years in the same period.

Training programs for primary care doctors and neurologists of Kazan are of great importance, since facilitate the early detection of AS, timely therapy initiation, quality of life improvement, and can subsequently lead to a reduction of the number of disabled people in this patient group.

Keywords: Ankylosing Spondylitis, Training Programs

Introduction

In recent years, the problem of ankylosing spondylitis timely diagnostics acquired high priority in the medical practice. Ankylosing spondylitis (AS), or Bechterew's disease, is a chronic general inflammatory disease that mainly

affects the axial skeleton and frequently involves acentric skeleton parts (enthesitis and arthritis), and other organs and systems. In Russia, the disease prevalence ranges from 0.1% to 1.4% among the adult population. The disease quickly leads to the disability of working age people [1]. At present, the time that passes between the first AS symptoms and the correct diagnosis ranges from 3 to 10 years [2-3]. In Russia, this period ranges from 7 to 8 years [4], which causes a late initiation of potentially effective treatment. A timely diagnosis and appropriate treatment can slow down the disability progression and significantly improve the quality of life.

The several-years-long delay in AS diagnosis after the onset of the disease has certain reasons [4-6]. These reasons include, a mild symptomatology is and/or variable clinical implications at the disease onset, slow radiographic signs of sacroiliitis – a symptom that is critical for the diagnostics of this disease. At the same time, a great problem in Russia is that primary care doctors often believe that AS is a rare abnormality that only affects men; they also lack sufficient knowledge of the signs of inflammatory back pain (IBP), and of the onset and course of the disease aspects. As a result, non-rheumatologists only observe a gradual decrease of working capacity and quality of life [7], and refer patients to rheumatologist far too late. Besides that, AS patients often consult several specialists (6-8 on average) before going to a rheumatologist [4,6,8].

Yet another problem not unique to Tatarstan and Kazan is an insufficient number of rheumatologists. Currently, the doctor staffing level in the region is 34% of the number that is recommended by the Ministry of Health of the Russian Federation (formerly, the Ministry of Health Care and Social Development) [9], which makes it difficult for patients to get special rheumatologic care.

Therefore, in view of the specified problems, there is an acute need to optimize AS early detection. Such optimization should primarily be achieved by improving the knowledge levels of primary care doctors.

The objective of this paper is to analyze the efficiency of the compiled training program for early detection of ankylosing spondylitis in Kazan clinical practice for primary care doctors [10-12].

The objective of the research is to optimize the set of measures for early detection of AS, based on actual clinical practice. The scientific novelty consists in the development of an algorithm of measures, aimed at early detection of AS. The practical value consists in the development of a comprehensive algorithm of AS early detection, which includes training programs for outpatient care doctors (therapists, neurologists). Special attention should be paid to the practical use of diagnostic criteria of inflammatory back pain, to the importance of detecting HLA-B27, and to a timely reference to a rheumatologist.

Materials and Methods

The work on the compilation of training programs and the evaluation of their efficiency was carried out in 3 (three) stages:

- 1 Assessment of the level of knowledge and problems regarding ankylosing spondylitis diagnostics and treatment among general practice doctors and neurologists;
- 2 Development of training programs, suitable for use in actual clinical practice;
- 3 Analysis of the programs' implementation efficiency.

The training programs for diagnostics and treatment of AS for primary care doctors were developed by the authors of the paper in 2009, and implemented in Kazan in 2010.

The first stage of the training program development involved the assessment of target doctors and their level of knowledge regarding the problem. According to the previous studies, patients with back pains usually consult a neurologist or a primary care doctor [13,14]. This was proved by the analysis of the Kazan State Rheumatology Center work statements. For example, 42% of patients, who visited the Center in 2009-2010, and were diagnosed with AS, were referred to said Center by a primary care doctor, 38% – by a neurologist, 6% – by a surgeon, 4% – by other specialists; 10% of patients consulted a rheumatologist themselves.

Prior to the development of programs, knowledge of 130 doctors (rheumatologists, neurologists and primary care doctors) regarding the criteria of differential diagnostics, back pain and inflammatory back pain was tested. Rheumatologists were tested separately, in order to determine the validity of questions. The tests included questions regarding the character back pains, as well as clinical tasks with different nosologies.

Table 1. Results of the test for back pain.

Specialty	Gave right answers to general questions regarding back pain	Gave right answers to questions regarding inflammatory back pain
Rheumatologists	100%	100%
Primary care doctors	60%	45%
Neurologists	70%	30%

According to the test, doctors are familiar with general back pains, but they lack in-depth knowledge of inflammatory back pain characteristics.

Training programs for general practice doctors, primary care doctors, and neurologists were developed in accordance with the results of the first stage. The content and frequency of studies varied, considering the differences in the

medical practices of general practice doctors/primary care doctors and neurologists. More specifically, for general practice doctors and primary care doctors, the studies took place quarterly, at outpatient clinics and inpatient clinics of Kazan. 20-30 doctors participated in said studies. Since AS patients with dominating spondylopathy can be diagnosed with such disorders as degenerative disc disease and lumboischialgia during repeated consultations, joint conferences with Kazan neurologists (40-50 people) were held twice a year, with a special focus on criteria of differential diagnosis of back pain and inflammatory back pain.

The program structure and final questions include:

1. Discussion on inflammatory back pain criteria with a subsequent hand-out of information on these criteria; neurologists participated in a more detailed discussion on differential diagnostics and the issues of lower back inflammatory pain;
2. Discussion on AS criteria;
3. Discussion with primary care doctors and general practice doctors on possible clinical signs at an onset of a disease;
4. Discussion with all doctors on the issue of misdiagnoses (spondylarthrosis, Reiter's disease, osteoarthritis, rheumatoid arthritis, lumboischialgia), which patients with AS can have their referral letters for rheumatologists;
5. An obligatory basic examination of patients with suspected AS when they are referred to a rheumatologist, with a view to reducing the diagnosis period and the number of rheumatologist consultations for general practice doctors and primary care doctors;
6. In training programs, the doctors' attention is drawn to the fact that according to data from all over the world, women also suffer from AS, and constitute almost 30%-40% of all patients;
7. Discussion on the importance of timely evaluation of laboratory findings (ESR, CRP), during which emphasis is laid on the fact that ESR and CRP often do not correlate with AS clinical activity, and increase only among 60% of patients. At the same time, the combination of clinical activity and laboratory activity predicts a rapidly progressive disease.
8. The importance of sacroiliac joint (SJ) X-ray study for all patients with suspected AS is stressed; discussion is held on the necessity and propriety of magnetic resonance imaging (STIR mode) for patients with IBP and suspected AS, especially during first months and years of the disease; neurologists' attention is drawn to the necessity of X-ray studies and MRI not only for the spine, but also for SJ, in case of inflammatory back pain.

9. Discussion with primary care doctors and general practice doctors on the issues of managing proven cases: the importance of drug-free (exercise) therapy, long-term administration of NSAID, possibilities of disease modifying therapy at early stages.

Results and Discussion

Training programs for doctors started in February 2010. In 2010, one hundred nine primary care doctors and general practice doctors of the city outpatient clinics took part in the programs, as well as twelve doctors of other specialties (surgeons, cardiologists, nephrologists, and ophthalmologists); forty-three nephrologists took part in conferences. In 2011, one hundred twelve primary care doctors and general practice doctors of outpatient clinics took part in training programs, as well as four doctors of other specialties (surgeons), and forty-eight nephrologists.

The last stage involved the analysis of work statements of the State Rheumatology Center for 2009-2011: 2009 – basic statement before training, 2010 – start of training programs, 2011 – evaluation of training programs' results.

Every workday, three qualified rheumatologists (the same doctors throughout three years) consult outpatients at Kazan State Rheumatology Center, who are referred to the center by primary care doctors and other specialists, or in cases of self-referral. The referral rate for each specialist is 15-20 patients per day (either initial or repeated examinations). According to the Order of the Ministry of Healthcare of the Republic of Tatarstan, annual statements on the Rheumatology Center outpatient referral are to be prepared in a specified form, wherein one should report the number of consulted patients and their distinction by nosology forms and diagnoses variance percentage. The efficiency of a training program is presented, based on the analysis of the Center's reports.

After the conduction of the training programs (2010-2011), the percentage of AS patients who referred to rheumatologists of all patients who consulted a doctor in that year increased from 7.1% in early 2009 to 9.6% in late 2010, and then to 10.1% in 2011. This includes both patients with early proven cases of the disease and initial patients with newly discovered AS.

In addition, the total number of patients who referred to the Kazan Rheumatology Center increased from 118 in 2009 to 190 in 2010, and 204 in 2011

Table 2. Outpatient consultations of AS patients at the Kazan State Rheumatology Center in 2009-2011.

Year	Total patients per year	Patients initially consulted this year	Number of AS patients (%) ¹	Number of initial AS ² patients (% of the total number of patients)
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2009	8438	5354 (63.5%)	378 (7.1%)	118 (31.2%)
2010	9127	5971 (65.4%)	575 (9.6%)	190 (33.1%)
2011	10098	6732 (66.7%)	683 (10.1%)	204 (29.9%)

1 - Number of AS patients initially consulted this year (% of the total number of patients initially consulted this year)

2 - Number of initial AS patients who visited the Center with already proven cases, or whose cases were proven during the consultation

In 2009, 78% of patients who were initially diagnosed with AS were referred to a rheumatologist with diagnoses that were, in fact, not AS. In most cases, they were referred with osteochondrosis, ESR and CRP increase, and in order to eliminate other reasons of pain, due to the lack of analgetic therapy effect. 18.5% of cases were Reiter's disease (RD) of acentric joints, 15.2% –osteoarthritis (OA), 13% –rheumatoid arthritis (RA).

The 2010 (the first year of the training programs' conduction), statement data showed a significant decrease of initial diagnoses variance (between referral diagnosis and rheumatologists' diagnosis), compared to the previous year: from 78% to 20.6%. In 2011, the variance percentage dropped to 18.1%. Such diagnoses as degenerative disc disease, lumboschialgia and Reiter's disease became rarer in referrals to rheumatologist, while the percentage of patients with lower back pain (LBP), undifferentiated arthritis (UDA) and arthralgia diagnoses increased, as shown in Table 3.

Table 3. Diagnoses divergence of AS patients, according to State Rheumatology Center outpatient consultations in 2009-2011.

Year	Number of AS patients	Diagnoses divergence	Diagnoses in referral letters to rheumatologist								
			DDD	LI	RD	RA	OA	UDA	Accelerated ESR	LBP	No diagnosis
2009	118	92 (78%)	27 (29.3%)	9 (9.8%)	17 (18.5%)	12 (13%)	14 (15.2%)	5 (5.4%)	4 (4.4%)	0	4 (4.4%)
2010	190	39 (20.5%)	7 (17.9%)	6 (15.4%)	5 (12.8%)	4 (10.3%)	6 (15.4%)	5 (12.8%)	1 (2.6%)	3 (7.7%)	2 (5.1%)
2011	204	37 (18.1%)	4 (10.8%)	5 (13.5%)	2 (5.4%)	6 (16.2%)	5 (13.5%)	8 (21.7%)	0	5 (13.5%)	2 (5.4%)

1 - initial diagnoses divergence (divergence between a referral diagnosis and a rheumatologist's diagnosis) of AS patients, DDD - degenerative disc disease, LI - lumboischialgia, RD – Reiter's disease, RA – rheumatoid arthritis, OA - osteoarthritis, UDA - undifferentiated arthritis, LBP - lower back pain.

The most essential result of training programs is the improvement of AS detectability among the Kazan population. According to the analysis of documents, the period between the onset of initial symptoms and the diagnosis shortened significantly ($p < 0,001$) (Figure 1). For example, in 2009, patients were diagnosed 8.4 ± 2.4 years, on average, after the onset of the disease, while in 2010, this period reduced to 4.2 ± 1.2 years, and constituted 3.5 ± 1.7 years in 2011.

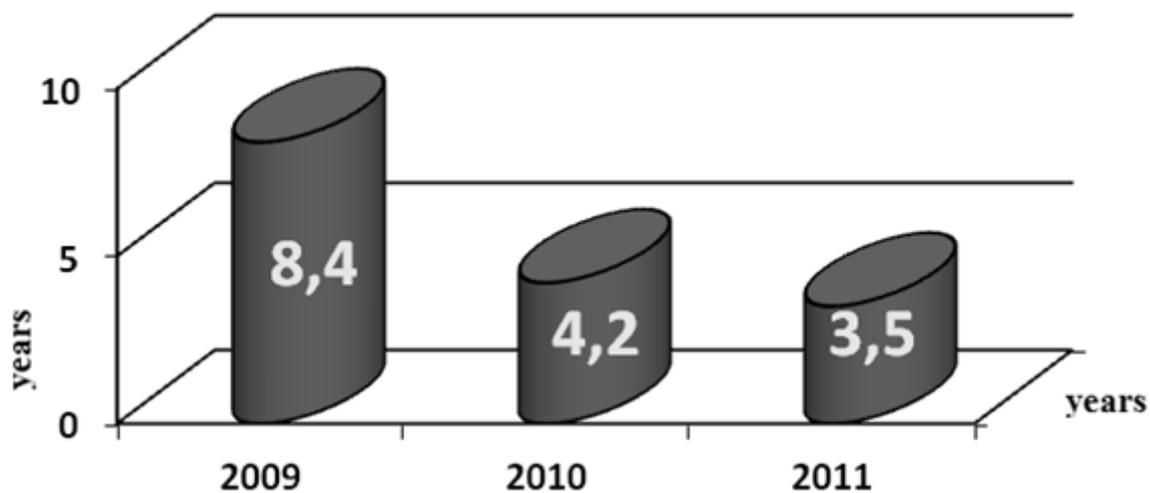


Figure 1. Time interval between the onset of initial symptoms and the AS diagnosis.

According to the obtained results, insufficient knowledge of primary care doctors, general practice doctors, and neurologists is the key factor in the delayed AS diagnosis. The results of this research indicate that the conduction of training programs is an efficient instrument to remedy such a situation. A clear differentiation of inflammatory and non-inflammatory back pain by doctors and the change of the stereotype of treating all patients with the help of neurologists were important for the early detection of AS. This was reflected by the increase in the total number of initially diagnosed AS patients, who were repeatedly consulted at the Kazan Rheumatologic Center, by 1.7-1.8 times in three years. The improvement of doctors' knowledge of the clinical signs at the disease onset and of modern AS diagnostics criteria led to a significant decrease in the diagnoses variance percentage: from 78% in 2009 (before training) to 18.1% in 2011 [7,15]. Furthermore, the analysis of diagnoses divergences cases showed that in this period, the number of patients with referral diagnoses of degenerative disc disease and Reiter's disease dropped by 2-3 times, while the number of patients with undifferentiated arthritis and LBP diagnoses increased by several times. The last diagnoses are "temporary" and allow doctors to continue the diagnostic research. It can be assumed that

training programs partially helped overcome doctors' stereotypes regarding young patients with back pain [16-19].

One of the indicators of the training programs' efficiency was a twofold reduction of the time interval between a disease onset and an AS referral diagnosis – from 8.4 ± 2.4 years in 2009 to 3.5 ± 1.7 years in 2011. Although even the time interval of 3.5 years can be considered a late diagnosis of AS, when compared to 7-8 years, such an AS diagnosis may be considered an early one in Kazan. Latest works on AS therapy claim that its highest efficiency is observed at early stages [20]. Therefore, training programs for primary care doctors can become an inexpensive and efficient instrument for early AS detection, and, in future, it can become cost-efficient by reducing drug treatment and decreasing the disability percentage.

Conclusions

Training programs for primary care doctors and neurologists of Kazan are of great importance, since facilitate the early detection of AS, timely therapy initiation, quality of life improvement, and can subsequently lead to a reduction of the number of disabled people in this patient group. Such programs pay special attention to the common use of inflammatory back pain criteria and timely referral to a rheumatologist.

The conduction of training programs in Kazan improved AS detection by primary health care doctors.

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