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COMPARISON OF SERONEGATIVE AND SEROPOSITIVE RHEUMATOID ARTHRITIS WITH REGARD TO SOME CLINICAL CHARACTERISTICS

USPOREDBA SERONEGATIVNOG I SEROPOZITIVNOG REUMATOIDNOG ARTRITISA U ODNOSU NA IZVJESNE KLINIČKE KARAKTERISTIKE

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Summary

The aim of this study is to establish a scientific comparative analysis between seronegative and seropositive rheumatoid arthritis (RA), with regard to some clinical characteristics. The studied group consisted of RA seronegative patients with titters lower then 1:64 defined by Rose-Waaler test, while the control group consisted of RA seropositive patients with titters of 1:64 or higher. Examinees all belonged to the 2nd and 3rd functional classes according to ARA criteria, were between 25-60 years of age (Xb=49.96), with disease duration between 1-27 years (Xbox=6.41). In the disease onset most frequently affected joints were metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joint of the hands, almost equally represented with regard to sero-status and sex. During the examination seropositive patients showed a higher presence of inflamation of peripheral joints of hand and foot, but only the presence of PIP of the hands was statistically significant (χ^2=15.63, p<0.01). Knees, talocrural joints and elbows were more frequently affected in seropositive patients, whereas humeroscapular, coxofemoral and sacroiliacal joints were more frequently affected in seronegative patients, but without significant statistical difference with regard to sero-status. The presence of affected PIP of the hands (χ^2=9.96, p<0.01) and knees (χ^2=4.17, p<0.05) with regard to sex was statistically significant in seropositive female patients, as well as the presence of atacked PIP of the hands (χ^2=6.08, p<0.05), and cervical vertebrae (χ^2=6.00, p<0.05) in seropositive male patients. There were some differences between groups with regard to sex in metatarsophalangeal joints (MTP), PIP of the foot, and other joints, but without any statistical significance. In both subsets statistically significant domination was found in affected second (χ^2=20.85, p<0.01) and third (χ^2= 15.70, p<0.01) fingers of the PIP level of hands and third finger (χ^2=6.52, p<0.05) of the MCP level. The mentioned parameters did not show a significant statistical difference with regard to sero-status and sex. Majority of patients had 1-4 deformities. Seropositive group had prevalent knee contractures, e.g. the eversion of the foot, while seronegative group had more "swan neck" deformities. The mentioned parameters did not show a significant statistical difference with regard to sero-status and sex. Longer duration of the disease resulted in an increased number of deformities, and this difference was statistically significant (t=5.92, p<0.01). Linear correlation between these two parameters resulted as high positive in general (r=0.49, p<0.01) and for groups separately, but without significant statistical difference with regard to sero-status. Duration of the disease with regard to the type of deformities was different in both subsets: in case of the longer duration of the disease "buttonhole" was prevalent with statistically significant difference in seropositive patients (t=2.10, p<0.05), whereas "fibular deviation" was prevalent in seronegative patients (t=2.64, p<0.01).

Key words

rheumatoid arthritis, seropositive, seronegative, clinical characteristics

Sažetak

U našem istraživanju uspoređena je skupina seronegativnog i seropozitivnog reumatoidnog artritisa (RA) u odnosu na neke kliničke karakteristike. Ispitivana skupina je obuhvatila seronegativne bolesnike s titrom ma-

njim od 1:64 određenim pomoću Waaler-Roseova testa, dok su kontrolnu činili seropozitivni bolesnici s titrom 1:64 ili višim. Svi ispitanici su pripadali II. i III. funkcionalnom razredu (ARA), bili životne dobi u rasponu 25-60 godina (Xb=49,96) s trajanjem bolesti 1-27 godina (Xb=6,41). U početku bolesti, najčešće zahvaćeni zglobovi su bili metakarpofalangealni (MCP) i proksimalni interfalangealni (PIP) zglobovi ruku, približno jednako zahvaćeni u odnosu na serološki status i spol. Tokom ispitivanja, seropozitivni bolesnici imali su znatno zahvaćenije periferne zglobove ruku i nogu, ali statistički značajno samo u slučaju rasprostranjenosti PIP ruku (χ^2=15,63 p<0,01). Koljena, talokruralni zglobovi i laktovi su bili znatno više zahvaćeni u seropozitvnih bolesnika, dok humeroskapularni, koksofemoralni, sakroilijakalni i radiokarpalni zglobovi u seronegativnih, bez znatne statističke razlike u odnosu na serološki status. U odnosu na spol, relevantna statistička razlika je nađena u zahvaćenosti PIP ruku (χ^2=9,96, p<0,01) i koljena (χ^2=4,17, p<0,05) u seropozitivnih ženskih bolesnika, kao i kod zahvaćenosti PIP ruku (χ^2=6,08, p<0,05) i cervikalnog dijela kralježnice (χ^2=6,00, p<0,05) u seropozitivnih muških bolesnika. Kod metatarzofalangealnih (MTP) zglobova, PIP nogu, kao i kod drugih zglobova, nađene su određene razlike između skupina u pogledu spola, ali statistički neznačajne. U obje ispitivane skupine statistički značajno je bila zahvaćenost drugih (χ^2=20,85, p<0,01) i trećih (χ^2= 15,70, p<0,01) prstiju u razini PIP ruku, kao i trećeg prsta (χ^2=6,52, p<0,05) u razini MCP, ali statistički neznačajno u odnosu na serološki status i spol. Veliki broj bolesnika je imao 1-4 deformiteta. U seropozitivnih bolesnika su dominirale kontrakture koljena, laktova, kao i everzija stopala, a u seronegativnih bolesnika deformiteti u obliku labuđeg vrata. Nisu nađene statistički relevantne razlike u odnosu na serološki status i spol. Broj deformiteta se povećao s povećanjem prosječnog trajanja bolesti i ova razlika je izražena sa znatnom statističkom razlikom (t=5,92, p<0,01). Izračunavanjem linearne korelacije između ovih dviju pojava, nađena je pozitivna i visoka korelacija (r=0,49, p<0,01) u cjelini i po skupinama, ali bez znatne statističke razlike u odnosu na serološki status. Trajanje bolesti u odnosu na vrstu deformiteta između skupina bilo je različito. Znatne statističke razlike su nađene za deformitet "bottonhole" s dužim trajanjem bolesti u seropozitvnih bolesnika (t=2,10, p<0,05), i za fibularnu devijaciju u seronegativnih bolesnika (t=2,64, p<0,01).

Ključne riječi

reumatoidni artritis, seropozitivan, seronegativan, kliničke karakteristike

Introduction

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory and autoimmune disease that leads to inevitable joint destruction and disability. The disease presents a wide spectre of clinical phenotypes of progressive, unspecific and destructive polyarthritis (1,2,3,4,5,6).

Disease progression is characterized by bone erosion and progressive articular deformations which attenuate functional mobility (7,8). In RA, the joints are usually affected in a fairly symmetrical fashion, although the initial presentation may be asymmetrical (9). Even though the etiopathogenesis of RA is unknown, the majority of scientists have supported the immunology based theory after the rheumatoid factor was discovered. IgMRF is considered as the most characteristic laboratory and immunological parameter (10), whose presence in the serum of the patients with RA is proven by agglutination-based test methods (Rose-Waaler and Latex tests). This parameter correlates with the activity of the disease, and becomes more specific when the titter is high (11,12). Rheumatoid factor is present in 80% of adults with rheumatoid arthritis, and these patients are classified as seropositive, while 20% of patients with proven RA, but without IgMRF presence, are classified as seronegative (13). RF can be of different immunoglobulin classes (G, A, D and E), defined by ELIZA (14).

The disease primarily affects small joints of the hands, e.g. PIP (proximal interphalangeal), MCP (metacarpophalangeal), and PIP of foot and metatarsophalangeal joints (MTP). As the pathology progresses, the inflammatory activity can also involve other joints and cervical spine (15). Changes of the cervical spine appear in more than 70% of patients with RA that lasts more than 10 years (16). Autopsy reports show that in 30% of cases arthritis of cricoarytenoide joint occurs earlier than it is clinically observed (17,18). Affection of coxofemoral joints is an uncommon afterwards appearance (19). Ligament ruptures and joint dislocation may produce other deformities of the hands: swan neck deformity, mallet finger, buttonhole, ulnar deviation, fibular deviation, etc. (20). Destruction is more frequently observed in foot joints than in hand joints (21).

Purpose

Whether seronegative and seroposive RA should be regarded as one disease with different clinical manifestations, or as two different diseases, has not been finally determined.

The aim of this study is to establish a scientific comparative analysis between seronegative and seropositive rheumatoid arthritis (RA) with regard to some clinical characteristics.

Patients and Methods

During the period 1991-2008 250 patients with a disease onset, diagnosed as seronegative and seropositive RA were examined at the Clinic for Sport Medicine in Prishtina and at internal medicine facilities in Kosovo.

Patients had the classic form of RA, and all fulfilled the ARA criteria (33). The test group consisted of 125 seronegative RA patients (93 female, 32 male) with titters lower than 1:64, as defined by Rose-Waaler test. The control group consisted of 125 seropositive RA patients (93 female, 32 male) with titters of 1:64 or higher. Patients all belonged to the 2nd and 3rd functional class (ARA), and were between 25-60 years of age. The duration of the disease was 1-27 years.

Clinical signs were explored: frequecy and type of affected joints at early stage of the disease and during examination, frequency of atacked fingers of the hands and foot, frequency and type of deformities, and correlation between some clinic parameters.

Statistical parameters used for presentation of the results: structure, prevalence, arithmetic average (Xb), standard deviation (SD), variation coefficient (CV %) and variation interval (Rmax-Rmin). T test and χ^2 test were used to determine differences between factors or features. Probability level was expressed by $p<0.01$ and $p<0.05$. Relationship between the variables was measured by Pearson linear correlation.

Results

In the beginning of the disease frequently affected joints were MCP and PIP joints of the hands, almost equally distributed with regard to sero-status and sex: 80 (64%) seronegative, 79 (63.2%) seropositive. Knee (14.4% : 21.6%), talocrural joints (0.8% : 6.4%), MTP (2.4% : 13.6%) and elbow (1.6% : 4%) were frequently present in seropositive subset, while radiocarpal joints (19.2% : 15.2%) were frequently present in seronegative subset, but without significant statistical difference with regard to sero-status. Among female patients with affected knee, the seropositive 20(21.5%) dominated compared to seronegative 9 (9.7%) (table 1), with a statistically significant differerence ($\chi^2=4.17$, $p<0.05$).

During the examination seropositive patients had more frequently affected peripheral joints of the hands: PIP (44% : 84%), MCP (71.2% : 87.2%) than seronegative, but statistically significant difference was found only in case of affected PIP of the hands ($\chi^2=15.63$, $p<0.01$). Proximal interphalangeal joints of the foot (23.2% : 20%) and MTP (62.4% : 68%) were nearly equally affected in both subsets ($p>0.05$). With regard to sex, a significant statistical difference was found for PIP joints of the hands, which were frequently affected in female seropositive patients (47.3% : 84.9%, $\chi^2=9.96$, $p<0.01$) and in male seropositive patients (34.4% : 81.3%, $\chi^2=6.08$, $p<0.05$). Some differences between groups concerning MTP, PIP of foot, and others were also noticed, but were not statistically significant with regard to sex (table 2).

In both subsets second (63.6% : 81%, $\chi^2=20.85$, $p<0.01$) and third (60% : 70.5%, $\chi^2= 15.70$, $p<0.01$) fingers of PIP level of the hands were significantly affected, as well as third finger (56.2% : 72.5%, $\chi^2=6.52$, $p<0.05$) of MCP level, but no statistical significance was found with regard to sero-status and sex (table 3). Second and third fingers of PIP level and MTP of foot in both subsets

Table 1. **Type and frequency of affected joints on the onset of RA, with regard to sero-status and sex**
Tablica 1. **Tip i frekvencija zahvaćenih zglobova u početku RA, u odnosu na sero-status i spol**

Joints	Female				Male				Total			
	SNRA		SPRA		SNRA		SPRA		SNRA		SPRA	
	N	%	N	%	N	%	N	%	N	%	N	%
Metacarpalphalangeal (MCP), proximal interph. of hands (PIP)	61	66.0	58	62.0	19	59.0	21	66.0	80	64.0	79	63.0
	$\chi^2=0.08$		$p>0.05$		$\chi^2=0.10$		$p>0.05$		$\chi^2=0.01$		$p>0.05$	
Knee	9	9.7	20	22.0	9	28.0	7	22.0	18	14.0	27	22.0
	$\chi^2=4.17$		$p<0.05$		$\chi^2=0.25$		$p>0.05$		$\chi^2=1.80$		$p>0.05$	
Radiocarpal	21	23.0	16	17.0	3	9.4	3	9.4	24	19.0	19	15.0
	$\chi^2=0.68$		$p>0.05$						$\chi^2=0.58$		$p>0.05$	
Talocrural	1	1.1	4	4.3			4	13.0	1	0.8	8	6.4
Humeroskapular	7	7.5	6	6.5					7	5.6	6	4.8
Metatarsal phalangeal (MTP)	2	2.2	10	11	1	3.1	7	22.0	3	2.4	17	14.0
Elbow	2	2.2	5	5.4					2	1.6	5	4.0

Table 2. **Number of affected peripheral joints of the hands and feet during the examination period with regard to sero-status and sex**
Tablica 2. **Broj zahvaćenih perifernih zglobova ruku i nogu u periodu ispitivanja u odnosu na sero-status i spol**

Sex	Sero-status		Hands		Feet	
			PIP	MCP	PIP	MTP
Female	SNRA	N	44	64	25	54
		%	47.3	68.8	26.9	58.1
	SPRA	N	79	79	20	61
		%	84.9	84.9	21.5	65.6
	Test	χ^2	9.96	1.57	0.56	0.43
		p	<0.01	>0.05	>0.05	>0.05
Male	SNRA	N	11	25	4	24
		%	34.4	78.1	12.5	75.0
	SPRA	N	26	30	5	24
		%	81.3	93.8	15.6	75.0
	Test	χ^2	6.08	0.45	0.11	0.00
		p	<0.05	>0.05	>0.05	>0.05
Total	SNRA	N	55	89	29	78
		%	44.0	71.2	23.2	62.4
	SPRA	N	105	109	25	85
		%	84.0	87.2	20.0	68.0
	Test	χ^2	15.63	2.02	0.30	0.30
		p	<0.01	>0.05	>0.05	>0.05

were frequently affected, but without any statical difference with regard to sero-status and sex (table 4).

Humeroscapular (55.2% : 50.4%), coxofemoral (24.8% : 18.4%) and sacroiliacal (32.8% : 27.2%) joints were more frequently affected in seronegative patients (table 5), while talocrural (40% : 48%) and knee (62.4% : 69.6%) joints were more frequently affected in seropositive ones. Coxofemoral (30.1% : 18.3%), sternoclavicular (29% : 21.5%) and cervical spine (55.9% : 44.1%) were more frequently affected in female seronegative patients, while elbow (45.2% : 50.5%) and knee (63.4% : 69.9%) were more frequently affected in seropositive female patients. Seropositive male patients had more frequently affected talocrural (31.3% : 53.1%), temporomandibular (9.4% : 28.1%) and acromioclavicular joints (3.1% : 25%). Statistically significant difference (χ^2=6.00, p<0.05) was found in seropositive male patients (18.8% : 56.3%), with regard to the affection of the cervical spine.

In seropositive subset knee contractures (32% : 41.6%), elbows (24% : 32.8%), and feet eversion (12% : 20%) dominated, while in the seronegative swan neck deformity (31.2%:24%) dominated. Seropositive female patients had more elbow (31.2% : 41.9%) and knee contractures (34.4% : 41.9%), while seronegative female patients had more swan neck deformities (35.5% : 23.7%). No statistical significance was found with regard to sero-status and sex (table 6).

Majority of patients had 1-4 deformities: 31 (44.9%) in seronegative, and 35 (46.7%) in seropositive, without any statistically significant difference with regard to sero-status and sex (table 7). The longer the average duration of the disease, the larger the number of deformities - this was statistically significant (t=5.92, p<0.01). Relationship between the variables had high correlation (r=0.49, p<0.01) in total, and between groups: (r=0.62, p<0.01) seronegative, (r=0.40, p<0.01) seropositive, but without any statistically significant difference with regard to sero-status and sex (figure 1,2).

Table 3. **Affected peripheral joints of hands, prevalence of changes in fingers during the examination period with regard to sero-status and sex**
Tablica 3. **Zahvaćeni periferni zglobovi, prevalencija promjena prsta za vrijeme ispitivanja, u odnosu na sero-status i spol**

Hands	Finger	Female				Male				Total				Test
		SNRA		SPRA		SNRA		SPRA		SNRA		SPRA		
		N	%	N	%	N	%	N	%	N	%	N	%	
PIP	With changes	44	100.0	79	100.0	11	100.0	26	100.0	55	100.0	105	100.0	
	1	4	9.1	10	12.7	3	27.3	3	11.5	7	12.7	13	12.4	p>0.05
	2	28	63.6	69	87.3	7	63.6	16	61.5	35	63.6	85	81.0	p>0.05
		χ^2=17.33		p<0.01				p>0.05		χ^2=17.33		p<0.01		
	3	24	54.5	60	75.9	9	81.8	14	53.8	33	60.0	74	70.5	p>0.05
		χ^2=17.33		p<0.01				p>0.05		χ^2=17.33		p<0.01		
	4	14	31.8	18	22.8	3	27.3	6	23.1	17	30.9	24	22.9	p>0.05
	5	5	11.4	12	15.2	1	9.1	5	19.2	6	10.9	17	16.2	p>0.05
MCP	With changes	64	100.0	79	100.0	25	100.0	30	100.0	89	100.0	109	100.0	
	1	9	14.1	15	19.0	2	8.0	7	23.3	11	12.4	22	20.2	p>0.05
	2	38	59.4	54	68.4	17	68.0	20	66.7	55	61.8	74	67.9	p>0.05
	3	36	56.3	59	74.7	14	56.0	20	66.7	50	56.2	79	72.5	p>0.05
		χ^2=17.33		p<0.01				p>0.05		χ^2=17.33		p<0.01		
	4	21	32.8	20	25.3	8	32.0	7	23.3	29	32.6	27	24.8	p>0.05
	5	8	12.5	7	8.9	5	20.0	5	16.7	13	14.6	12	11.0	p>0.05

Table 4. **Affected peripheral joints of foot, prevalence of changes in fingers during the examination period according to sero-status and sex**
Tablica 4. **Zahvaćeni periferni zglobovi nogu, prevalencija promjena prstiju u periodu ispitivanja, u odnosu na sero-status i spol**

Feet	Fingers	Female				Male				Total				Test
		SNRA		SPRA		SNRA		SPRA		SNRA		SPRA		
		N	%	N	%	N	%	N	%	N	%	N	%	
PIP	With changes	25	100.0	20	100.0	4	100.0	5	100.0	29	100.0	25	100.0	
	1	12	48.0	7	35.0	2	50.0	3	60.0	14	48.3	10	40.0	p>0.05
	2	13	52.0	13	65.0	2	50.0	3	60.0	15	51.7	16	64.0	p>0.05
	3	6	24.0	10	50.0	2	50.0	1	20.0	8	27.6	11	44.0	
	4	1	4.0	6	30.0			1	20.0	1	3.4	7	28.0	
	5	4	16.0	4	20.0					4	13.8	4	16.0	
MTP	With changes	54	100.0	61	100.0	24	100.0	24	100.0	78	100.0	85	100.0	
	1	18	33.3	26	42.6	10	41.7	9	37.5	28	35.9	35	41.2	p>0.05
	2	31	57.4	30	49.2	15	62.5	17	70.8	46	59.0	47	55.3	p>0.05
	3	21	38.9	21	34.4	8	33.3	12	50.0	29	37.2	33	38.8	p>0.05
	4	3	5.6	8	13.1	4	16.7	3	12.5	7	9.0	11	12.9	
	5	5	9.3	8	13.1	1	4.2	4	16.7	6	7.7	12	14.1	
		p>0.05				p>0.05				p>0.05				

Duration of the disease according to the type of deformities (table 8) was different between groups. Statistically significant difference was found for "button-hole" deformities in seropositive patients with longer duration of the disease ($t=2.10$, $p<0.05$), and for fibular deviation in seronegative patients ($t=2.64$, $p<0.01$).

Discussion

Regardless of the expectations, arthritis may initially affect not exclusively small joints, but other joints as well, which matches our findings that the most affected joints in the onset were PIP and MCP joints of the hands, almost equally distributed in both groups and both sexes (21,22,23).

Although knees, talocrural joints, MTP and elbows were frequently affected in seropositive patients, statistical significance was found only in affected knees in seropositive female patients ($\chi^2=4.17$, $p<0.05$). Fujinami M. et al. (24) have found from immunohistological data that IgMRF was positive in some plasma cells in the synovium of both seropositive and seronegative RA patients. Likewise, Salvarani C. et al. (25) and Papadopoulos IA. et al. (26) ascertained that the onset has different articular manifestations in seropositive patients compared to the seronegative. During the examination period seropositive patients had frequently affected peripheral joints of the hands and foot, specially second and third fingers, but statistical significance was found only for PIP of hands ($\chi^2=15.63$, $p<0.01$), valid for both sexes. These results are much closer to the conclusion that the

Table 5. **Analysis of affected joints and cervical spine during follow-up, with regard to sero-status and sex**
Tablica 5. **Analize zahvaćenih zglobova i vratne kralježnice u periodu ispitivanja, u odnosu na sero-status i spol**

Joints	Female				Male				Total			
	SNRA		SPRA		SNRA		SPRA		SNRA		SPRA	
	N	%	N	%	N	%	N	%	N	%	N	%
Radiocarpal joints	54	58.1	54	58.1	18	56.3	19	59.4	72	57.6	73	58.4
Elbow	42	45.2	47	50.5	10	31.3	7	21.9	52	41.6	54	43.2
Humeroscapular	56	60.2	51	54.8	13	40.6	12	37.5	69	55.2	63	50.4
Talocrural	40	43.0	43	46.2	10	31.3	17	53.1	50	40.0	60	48.0
Knee	59	63.4	65	69.9	19	59.4	22	68.8	78	62.4	87	69.6
Coxofemoral	28	30.1	17	18.3	3	9.4	6	18.8	31	24.8	23	18.4
Sacroiliacal	37	39.8	32	34.4	4	12.5	2	6.3	41	32.8	34	27.2
Temporomandibular	25	26.9	23	24.7	3	9.4	9	28.1	28	22.4	32	25.6
Cricoarytenoid	2	2.2	1	1.1					2	1.6	1	0.8
Sternoclavicular	27	29.0	20	21.5	2	6.3	5	15.6	29	23.2	25	20.0
Acromioclavicular	31	33.3	26	28.0	1	3.1	8	25.0	32	25.6	34	27.2
Cervical spine	52	55.9	41	44.1	6	18.8	18	56.3	58	46.4	59	47.2
					$\chi^2=6$		$p<0.05$					

Table 6. **Type and frequency of deformities with regard to sero-status and sex**
Tablica 6. **Tip i frekvencija deformiteta u odnosu na sero-status i spol**

Type of deformities	Female				Male				Total			
	SNRA		SPRA		SNRA		SPRA		SNRA		SPRA	
	N	%	N	%	N	%	N	%	N	%	N	%
Ulnar deviation	26	28.0	26	28.0	6	18.8	7	21.9	32	25.6	33	26.4
Swan neck	33	35.5	22	23.7	6	18.8	8	25.0	39	31.2	30	24.0
Malet finger	16	17.2	16	17.2	2	6.3	2	6.3	18	14.4	18	14.4
Buttonhole	2	2.2	8	8.6	2	6.3	1	3.1	4	3.2	9	7.2
"Z-thumb" deformity	20	21.5	18	19.4	4	12.5	3	9.4	24	19.2	21	16.8
Dorzal flexion MCP	9	9.7	7	7.5	2	6.3	3	9.4	11	8.8	10	8.0
Syndrome Backdahl	33	35.5	36	38.7	6	18.8	6	18.8	39	31.2	42	33.6
"Opera glass"	1	1.1	3	3.2					1	0.8	3	2.4
Elbow contractures	29	31.2	39	41.9	1	3.1	2	6.3	30	24.0	41	32.8
Shoulder contracture	34	36.6	32	34.4	6	18.8	10	31.3	40	32.0	42	33.6
Fibular deviation	11	11.8	11	11.8	2	6.3	7	21.9	13	10.4	18	14.4
Feet eversion	13	14.0	19	20.4	2	6.3	6	18.8	15	12.0	25	20.0
Hallux vallgus	16	17.2	20	21.5	5	15.6	5	15.6	21	16.8	25	20.0
Knee contractures	32	34.4	39	41.9	8	25.0	13	40.6	40	32.0	52	41.6
Coxofemoral joints contractures	12	12.9	11	11.8	2	6.3	4	12.5	14	11.2	15	12.0
Atlanto-axial subluxation	5	5.4	4	4.3	1	3.1	1	3.1	6	4.8	5	4.0
	p>0.05				p>0.05				p>0.05			

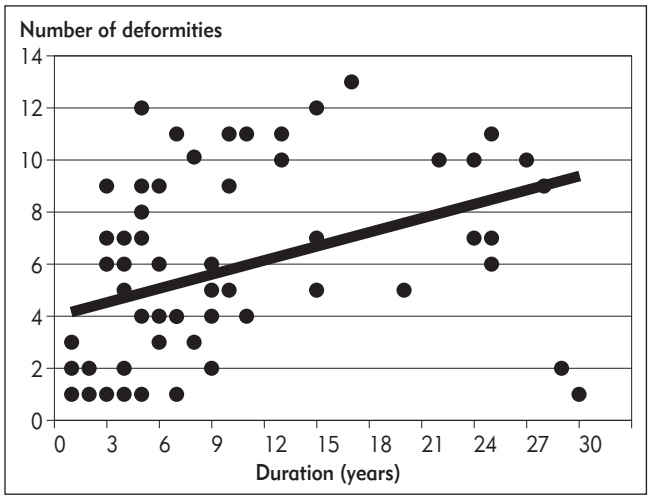
seropositive disease manifests itself with more affected MTP joints of the foot (27,28). The number and locations of other affected joints, although high in our seropositive patients, had statistically significant difference (χ^2=6.00, p<0.05) only in cervical spine of the seropositive male patients. Edelman et al. (29) confirmed that seronegative and seropositive rheumatoid arthritis appear to have very similar clinical features, but differing degrees of severity, while Masi AT. et al. (30) have noticed that majority (55%) of patients who were seropositive at the time of diagnosis, converted to seronegative during follow-up, and no correlation between swollen joints and erosions was found. In this sense, Lilleby V. et al. (31), Dahl SL. et al. (32) think that age, sex, race, presence of RF and accelerated ERS do not correlate with clinical reaction. Wolfe F. (33), by analysing blood serum and clinical measurements in 576 patients with RA has found that RF just slightly correlates with clinical activity changes. Kariakina EV. and Belova SV. (34) explicitly confirmed that the measurement of RF is not a helpful indicator of clinical improvement or impairment.

With regard to number and type of deformities, seropositive patients, markedly female (35), dominated. According to our data, female seropositive patients were most threatened. Being a women presents a risk factor for appearance of RA (36,37,38). In patients with early RA, MCP and PIP are significantly related to sex and height (39). This conclusion complements the study of Del Rincon I. et al. (40), who confirmed the heterogeneity between male and female patients with regard to the effect of DRB1 epitope in clinical manifestations. Reilly PA. et al. (41), contrary to the above mentioned opinions, confirmed that females, no mater to which sero-group belonged, could have same disease severity.

Table 7. **Correlation between number of deformities and duration of the disease, with regard to sero-status**
Tablica 7. **Korelacija između broja deformiteta i trajanja bolesti, u odnosu na sero-status**

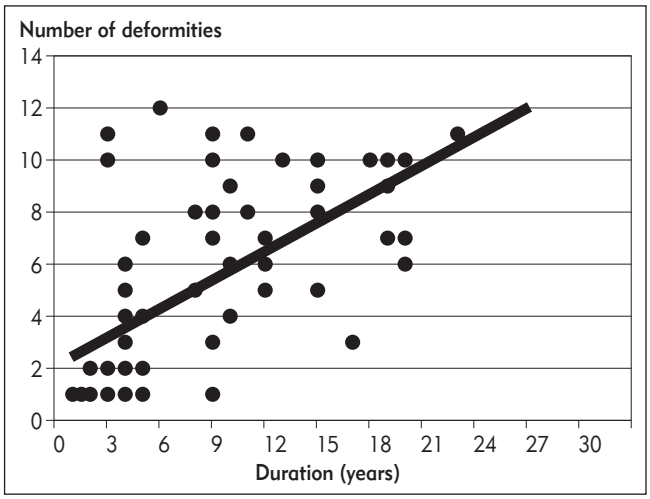
Number of deformities	SNRA				SPRA				Total				T-test	
	The examinees		Duration of the disease		The examinees		Duration of the disease		The examinees		Duration of the disease			
	N	%	Xb	SD	N	%	Xb	SD	N	%	Xb	SD	t	p
1-4	31	44.9	4.5	3.3	35	46.7	5.4	6.7	66	45.8	5.0	5.4	0.71	p>0.05
5-8	20	29.0	11.9	4.9	19	25.3	10.5	7.8	39	27.1	11.2	6.4	0.66	p>0.05
9+	18	26.1	13.4	7.2	21	28.0	12.8	8.0	39	27.1	13.1	7.5	0.26	p>0.05
Total	69	100.0	9.0	6.4	75	100.0	8.8	8.0	144	100.0	8.9	7.2	0.16	p>0.05
T-test, 1-4/9	t=4.99		p<0.01		t=3.57		p<0.01		t=5.920		p<0.01			
Correlation	r=0.62		p<0.01		r=0.40		p<0.01		r=0.491		p<0.01			
Regression	Y=2.09+0.37X				Y=3.90+0.18X				Y=3.21+0.25X					

Figure 1. **Correlation and regression between duration and number of deformities in SPRA**
Slika 1. **Korelacija i regresija između trajanja i broja deformiteta u SPRA**



y=0.18x+3.9 R=0.62 T=6.54 p<0.01

Figure 2. **Correlation and regression between duration and number of deformities in SNRA**
Slika 2. **Korelacija i regresija između trajanja i broja deformiteta u SNRA**



y=0.37x+2.09 R=0.40 T=3.69 p<0.01

Table 8. **Correlation between the duration of the RA and type of deformities, with regard to sero-status**
Tablica 8. **Korelacija između trajanja bolesti i tipova deformiteta, u odnosu na sero-status**

Type of deformities	Presence of deformities	SNRA				SPRA				Total				T-test	
		The examinees		Duration of the disease		The examinees		Duration of the disease		The examinees		Duration of the disease			
		N	%	Xb	SD	N	%	Xb	SD	N	%	Xb	SD	t	p
Swan neck	No	86	68.8	4.0	3.8	95	76.0	5.0	6.4	181	72.4	4.5	5.3	1.29	p>0.05
	Yes	39	31.2	11.9	6.4	30	24.0	10.7	7.0	69	27.6	11.4	6.6	0.72	p>0.05
	T-test	t=7.17		p<0.01		t=3.98		p<0.01		t=7.69		p<0.01			
"Z-thumb" deformity	No	101	80.8	4.9	4.9	104	83.2	4.4	4.8	205	82.0	4.7	4.8	0.68	p>0.05
	Yes	24	19.2	13.0	6.0	21	16.8	15.9	8.0	45	18.0	14.4	7.1	1.36	p>0.05
	T-test	t=6.18		p<0.01		t=6.34		p<0.01		t=8.76		p<0.01			
Buttonhole	No	121	96.8	6.3	6.0	116	92.8	5.3	5.5	237	94.8	5.8	5.8	1.30	p>0.05
	Yes	4	3.2	11.3	5.1	9	7.2	19.8	9.4	13	5.2	17.2	9.1	2.10	p<0.05
	T-test	t=1.89		p>0.05		t=4.54		p<0.01		t=4.45		p<0.01			
Fibular deviation	No	112	89.6	5.5	5.1	107	85.6	5.9	6.9	219	87.6	5.7	6.1	0.54	p>0.05
	Yes	13	10.4	15.1	6.0	18	14.4	9.1	6.5	31	12.4	11.6	6.9	2.64	p<0.01
	T-test	t=5.57		p<0.01		t=1.92		p>0.05		t=4.57		p<0.01			
Elbow contractures	No	95	76.0	4.9	4.5	84	67.2	5.1	5.9	179	71.6	5.0	5.2	0.22	p>0.05
	Yes	30	24.0	11.4	7.5	41	32.8	9.0	8.1	71	28.4	10.0	7.9	1.28	p>0.05
	T-test	t=4.53		p<0.01		t=2.78		p<0.01		t=4.99		p<0.01			
Knee contractures	No	85	68.0	5.8	5.9	73	58.4	3.7	4.0	158	63.2	4.8	5.2	2.58	p<0.01
	Yes	40	32.0	7.9	5.9	52	41.6	10.1	8.4	92	36.8	9.1	7.5	1.45	p>0.05
	T-test	t=1.87		p>0.05		t=5.06		p<0.01		t=4.88		p<0.01			
Shoulder contractures	No	85	68.0	3.9	3.7	83	66.4	4.9	6.3	168	67.2	4.4	5.1	1.28	p>0.05
	Yes	40	32.0	11.9	6.4	42	33.6	9.2	7.4	82	32.8	10.5	7.0	1.75	p>0.05
	T-test	t=7.36		p<0.01		t=3.22		p<0.01		t=7.03		p<0.01			

Conclusion

In both subsets peripheral joints were significantly affected. With regard to sero-status only PIP of the hands were statististically significant. Prevalence of affected knees, talocrural joints and elbows is more frequent in seropositive patients, whereas humeroscapular, coxofemoral and sacroiliacal joints are more frequently affected in seronegative patients. Significantly, seropositive females frequently have affected knees, whereas seropositive males frequently have affected cervical spine. Seropositive RA is accompanied with more knee

contractures, e.g. the eversion of the foot, whereas seronegative RA has more "swan neck" deformities. This fact did not ascertain any significant difference. In conclusion, the longer the duration of the disease, the larger the number of deformities - this difference has statistical significance.

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