

THE SOURCE OF INFECTION AND THE MOST FREQUENT CAUSES OF REACTIVE ARTHRITIS IN KOSOVO

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ABSTRACT

Introduction: Reactive arthritis is an autoimmune condition which emerges as a counteraction towards an infection which has a focus elsewhere in the body. **The purpose** of this study is isolation of causative agents of reactive arthritis and ascertains the source of infection. **The study** has been carried out in the Rheumatology Clinic in Prishtina and specialized ambulance O.S. "Vendenisi-AL" in Besiana, whereas isolation of causative agents has been carried out in the National Institute for Public Health (NIPH). The study has prospective, comparative and analytical feature. **Results:** Out of 100 patients, 66% were males and 34% females. Among males we have noticed domination of post-urethritis and post-streptococcal reactive arthritis, whereas among females dominates reactive arthritis of enteral etiology. The study concludes that: urogenital tract was the source of infection with 66% of cases, nasopharyngeal tract with 19% of cases, and enteral tract with 15% of cases respectively. Predominantly presents bacteria are E. Coli with 21%, Staphylococcus aureus with 20%, Streptococcus B. hem. gr. A with 16% of cases respectively and other species. **Conclusion:** frequency of arthritis with urogenital etiology was 2:1 in favor of males, with nasopharyngeal etiology 3:1 in favor of males, whereas in arthritis with enteral etiology we have noticed a slight dominance in favor of females.

Key words: Reactive arthritis, bacterial causative agents, source of infection.

1. INTRODUCTION

Reactive arthritis is the specific entity of aseptic inflammatory arthritis and follows the previous infection in other parts of the body. Current name, reactive arthritis, dates back from the '70 of last century, as proposed by Ahvonen and Aho with their colleagues (1, 2).

According to them, reactive arthritis:

- Appears after an infection with known etiology.
- From the end of infection to the onset of arthritis, there is a latent period which usually lasts 1 – 3 weeks.
- Synovial fluid is always sterile.
- Antibiotics are efficient in the treatment of infection, but they do not work in arthritis.

Reactive arthritis is a negative spondyloarthropathy usually associated with HLA B27 and mostly is found among Caucasian race in the group age 20 to 40 year old more frequent among males than females (3, 4).

This condition is rarer among children and accounts for

3% of totally affected patients with reactive arthritis (5).

Onset of illness is usually associated with urinary symptoms which are followed by arthritis (T/C articulation, knees, etc.), this correlation accounts for 50% of patients with urogenital symptoms, for 75% of patients with gastrointestinal symptoms and at the end conjunctivitis is also correlated with symptoms of reactive arthritis.

Onset of illness is characterized with tiredness, slight fever, joint swelling - usually on the lower limbs with asymmetrical affection of joints. Sometimes edema and pain involve fingers of both hands which in turn take the shape of sausages, whereas on the insertion spot of tendon to calcaneus we often see the enthesopathy of heel.

Most common clinical presentation of reactive arthritis is an oligoarthritis, sometimes monoarthritis, and rarely non-symmetrical polyarthritis with onset two or three weeks after a urogenital or gastrointestinal infection which is featured with pain, fever, occasional redness, usually in the

talocrural joint or knees.

Bacterial causative agents isolated in our work are: *E. coli*, *Staphylococcus aureus*, *Chlamydia*, *Ureaplasma urealyticum*, *Shigella*, *Salmonella enteritidis*, *Yersinia*, *Campylobacter jejuni*, *Streptococcus beta haemolyticus gr. A*, *Streptococcus pn.*, *Enterococcus* etc.

2. THE PURPOSE OF THIS PAPER

The source of infection.

- Identification and analysis of bacterial causative agent with the help of direct and indirect microbiological methods.
- From the study were excluded: a) Patients with negative results (bacterial causative agent is not isolated); b) Patients with any other rheumatic comorbidity, and c) Patients who were undergoing antibiotic therapy.

3. MATERIAL AND METHOD

As a material for work we have utilized the study in which were included 100 patients diagnosed with reactive arthritis who have been visited in the Rheumatology Clinic in Prishtina during the period 01.03.2013 – 01.03 2015.

Object of study were 100 patients, 66 of them were males and 34 females. Youngest patient was 13 years old, and the oldest was a 54 year old. Mean age of our subjects was 33,5 years old. Upon admission to the Rheumatology Clinic patients were interviewed in detail, clinical examinations were undertaken, and main complaints were recorded. Patients underwent necessary laboratory analyses, including hematological and biochemical examinations, rheumatism testing, immune-electrophoresis, also microbiological examinations were requested (cultures, samples, serum) etc. This paper is prospective, comparative and analytical. As a method for work we have employed direct and indirect microbiological methods. At the direct method with the help of cultures: (urine culture, coproculture, hemoculture), followed by sample collection: (pharyngeal sample, nasal sample, urethral sample, vaginal sample, prostate exprimat, etc). with the help of indirect methods such as determination of antibodies in serum for: *chlamydia*, *mycoplasma*, *Yersinia*, *Campylobacter jejuni*, etc. we have identified bacterial causative agents. These procedures have been completed in the NIPH.

4. RESULTS

Data are presented in the tables:

Sex	Number of patients	%
Females	34	34%
Males	66	66%
Total	100	100%

Table 1. Prevalence broken down on sex. Prevalence broken down by sex

Source of infection	Number	%
Urogenital tract	66	66%
Nasopharyngeal cavity	19	19%
Enteral tract	15	15%
Total	100	100%

Table 2. Data on the source of infection. Source of infection: presented in numbers and percentages.

Source of infection	Male		Female		Totali	
	Nr.	%	Nr.	%	Nr.	%
Urogenital tract	45	68.18%	21	61.76%	66	66%
Enteral tract	7	10.6%	8	23.52%	15	15%
Nasopharyngeal cavity	14	21.21%	5	14.7%	19	19%
Total	66	100%	34	100%	100	100%

Table 3. Source of infection broken down by sex. Source of infection broken down by sex

Name of causative agents	Number	%
<i>E. coli</i>	21	21%
<i>Staphylococcus aureus</i>	20	20%
<i>Streptococcus B. hem. Gr. A</i>	16	16%
<i>Streptococcus pneumoniae.</i>	3	3%
<i>Salmonella</i>	3	3%
<i>Yersinia</i>	6	6%
<i>Campylobacter jejuni</i>	3	3%
<i>Shigella</i>	3	3%
<i>Enterococcus Spp.</i>	4	4%
<i>Chlamydia</i>	12	12%
<i>Mycoplasma (Ureaplasma urealyticum)</i>	9	9%

Table 4. Isolated bacterial causative agents. Isolated bacterial causative agents

Name of bacteria	Male		Female	
	Nr.	%	Nr.	%
<i>Escherichia coli</i>	13	19.69%	8	23.52%
<i>Staphylococcus aureus</i>	16	24.24%	4	11.76%
<i>Streptococcus B. hem. Gr. A</i>	12	18.17%	4	11.76%
<i>Streptococcus pneumoniae</i>	2	3.03%	1	2.94%
<i>Salmonella</i>	1	1.51%	2	5.88%
<i>Yersinia</i>	3	4.54%	3	8.82%
<i>Campylobacter jejuni</i>	2	3.03%	1	2.94%
<i>Shigella</i>	1	1.51%	2	5.88%
<i>Eterococcus Spp.</i>	4	6.06%	0	0%
<i>Chlamydia</i>	6	9.09%	6	17.64%
<i>Mycoplasma (Ureaplasma urealyticum).</i>	6	9.09%	3	8.82%
Total	66	100%	34	100%

Table 5. Isolated bacterial causative agents broken down by sex. Isolated bacterial causative agents broken down by sex

5. DISCUSSION

From the study we conclude that: Reactive arthritis is an illness which affects mostly males with proportion 2:1 in the cases of reactive arthritis with post urogenital etiology, and 3:1 in proportion among the cases of reactive arthritis with post nasopharyngeal etiology. Situation is different in the cases of reactive arthritis with post enteral etiology where we noticed a slight domination of female sex. The data obtained from the study were approximate with findings of many authors, such as: Leiri Salo M. et al. (6), Braun J. et al. (7), and authors Rapo M (8), Becks, Kingsley G, Van Der Heijde D, Siepre J, etc.

Many authors believe that reactive arthritis is much more frequent among males, particularly arthritis of urogenital etiology. Our findings are identical with the work of Williams and Calin with reactive arthritis caused by *yersinia* (9). There are also authors who concluded that this illness is manifested in equal proportion in both sexes (Oatas JK, Pavlica Lj, Mitrovic D, Paronen I. Eastmond JC. Toivanen A. et al, etc. (10, 11, 12, 13).

As for the source of infection concerns, in our study the

most frequent were infections of urogenital with 66% of patients, followed by infections of nasopharyngeal cavity with 19% of patients, and the third were infections of enteral etiology with the total of 15% patients.

Most frequent isolated agents were: *E. coli*, *Staphylococcus aureus*, *Strep. B. hem. gr. A*, *Mycoplasma (Ureaplasma urealiticum)*, *Yersinia*, *Enterococcus spp.*, *Salmonella*, *Shigella*, *Campylobacter jejuni* etc. It is not worthy to mention that our paper is in line with most up to date findings, because the causative agents of reactive arthritis have significantly changed in recent times. Nowadays *Escherichia coli*, *Staphylococcus aureus*, *Streptococcus hemolyticus gr. B*, *Borrelia burgdorferi*, *Clostridium difficile*, *Giardia lamblia* etc. are becoming more prevalent in the isolated samples of patients (mostly among youth).

In our study, reactive arthritis caused by *E. coli* is leading ahead of other causes. In this regard our study corresponds with the study of Linz JA (14). There are opposing opinions too: Hill Gaston JS, Lillcrap Ms (2003) in his work "Arthritis associated with infection" does not attribute any significant role to *E. coli* and *staphylococcus aureus* (15). As for the *staphylococcus*, lately he has become the most frequent pathogenic agent isolated in the urethral sample, urine culture, hemoculture, etc. Prevalence of isolated *Staphylococcus aureus* reaches 0.6% in Denmark, 0.9% in Netherland and Sweden, 18.2% in Germany, 36.9% in Croatia, and 51.4% in Greece (16). *Staphylococcus* has been isolated in 20% of cases with our patients. Our findings and treatment of cases with *staphylococcus* corresponds with authors: James Mc Carty et al. and Piercy et al (17, 18). As for the etiological agents such as: *Chlamydia*, *Yersinia*, *Salmonella* and *Campylobacter jejuni*, our results are correlated with authors: Glenas A., Melby K. et al. (19). In our study were identified 15 cases of reactive arthritis with enteral etiology (8 of them are females) which are identified with Sharp results, while our preoccupation with scarce symptomatology among cases of infection caused by *Chlamydia* we have encountered also with authors Koussa M., Saiku P. et al.

An important entity which causes reactive arthritis is also a post-streptococcal reactive arthritis. *B hemolytic streptococcus A* has been isolated in 16 cases of post-streptococcal reactive arthritis. Our study, treatment and health management was in full correlation with studies of authors such as Van der Helm, Van Mil AH et al. (20).

Our findings correspond with those of authors Kobayashi S. Ishikava G. et al (21), and Izairi R. Rexhepi S. et al. (22). In numerous papers *E. coli*, *Beta hemolytic Streptococcus*, *Staphylococcus*, *Giardia lamblia*, *Borellia burgdorferi*, *N. gonorrhoeae*, *interferon*, *vaccine against hepatitis B*, *vaccine BCG* in the cancer of urine bladder are considered as a possible causative agents of reactive arthritis. Classic causative agents such as: *Chlamydia*, *Ureaplasma*, *Yersinia*, *Shigella*, *Campylobacter jejuni*, etc. are still present in a considerable number of cases.

6. CONCLUSION

Results from our study have indicated the following:

- Out of 100 patients diagnosed with reactive arthritis, 66 were males and 34 females.
- Illness was more frequent among males in ratio 2:1

at urogenital infections. Among the patients with nasopharyngeal infections this ratio was 3:1 in favor of males, whereas in patients with reactive arthritis with enteral etiology ratio was almost equal with only slight domination of females.

- In 66% of all cases source of infection was urogenital tract, in 19% gastrointestinal tract, and in 15% of cases source of infection was nasopharyngeal tract.
- As for the distribution of the source of infection among sexes, 45 males and 21 females had diagnosed urogenital infection, among 14 males and 5 females the source of infection was nasopharyngeal cavity, whereas the enteral tract was the source of infection for 7 males and 8 females.
- Among causative bacterial agents are leading: *E. coli* with 21% patients, *Staphylococcus aureus* with 20%, *Streptococcus B. hem gr. A* 16%, *Chlamydia* with 12%, *Ureaplasma urealiticum* with 9%, followed by *Yersinia* with 6%, *Enterococcus spp.* with 4%, *Streptococcus pn.*, *Campylobacter jejuni* and *Shigella* with 3% of patients, etc.
- If we observe the season of onset for causative bacterial agents, we notice that: reactive arthritis caused by bacteria from urinary tract is present throughout the year. Reactive arthritis caused by bacterial agents from enteral tract is more frequent during the summer season, whereas reactive arthritis caused by nasopharyngeal agents is more present during the winter season.

- Conflict of interests: None declared.

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