



## KERATOCONJUNCTIVITIS SICCA IN PATIENTS WITH RHEUMATOID ARTHRITIS

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**Summary:** The study included 166 women and 12 men aged 19 to 65 years (mean 42 years) with rheumatoid arthritis. All patients had classic or definite rheumatoid arthritis, as defined by the criteria of the American Rheumatism Association (ARA). We diagnosed keratoconjunctivitis sicca with the aid of the Schirmer test, tear film breakup time, rose bengal and fluorescein corneal staining. In 45% patients with rheumatoid arthritis we found positive the Schirmer test and tear film breakup time. In 25% patients with rheumatoid arthritis we found moderate or severe ocular burning, foreign body sensation, pain and positive rose bengal corneal staining.

**Key words:** Keratoconjunctivitis sicca, rheumatoid arthritis

### Introduction

Rheumatoid arthritis (RA) is a chronic systemic disease of inflammatory character which can spread over all the organs of the human body but joint diseases and the disease of the surrounding tissues give the dominant clinic signs and symptoms of it. Extra articular manifestations of the disease are generally more often seen in patients with a high degree rheumatoid factor (RF), soluble immune complex and persistent diseases of some joints. They can be frequently seen on the skin, lung, heart and eyes. Keratoconjunctivitis sicca (KCS) is the most frequent complication of RA and appears in 20 – 50% of the patients with RA, particularly in women (90%). The incidence of the disease increases with age and serious joint changes (1,2).

KCS appears as a result of the decreased secretion of tears from the main and accessory lacrimal glands. The interruption of lacrimal secretion is caused by the atrophic and cirrhotic changes in lacrimal glands and leads to the reduction of middle layer of precorneal lacrimal film which becomes viscous in the later stages (2). Patients complain of burning, itching and the feeling of having a foreign body in the eyes. The eyes may be red and photophobic and the symptoms become worse in dry and smoky surroundings. The consequence of the dryness of

the eyes is the damage of the corneal epithelium. This epithelial keratopathy can be most often seen in the part of the cornea located in the interpalpebral fissure where the changes manifested in the shape of some small fine grayish stains are coloured by fluorescein (2). In KCS conjunctival goblet cells are stimulated to increase secretion of the mucus. Very often we have a finding of some fibrous coverings of mucin tied down to the cornea or laid in the lower fornix (1,2). It rarely appears as a form of filamentous keratitis, e.g. as a dialysis of corneal epithelium in the form of twisted filaments tied up to the cornea by one part. This is a particularly painful condition, because blinking moves the filaments, tugging of the epithelial attachments and tending to strip off further epithelium. It is not clear whether the mucus manifestations are the result simply of an increase in mucus secretion (or an abnormal mucus), or to mucus precipitation because of the disturbed balance of components in the tear film resulting from a fall in the watery component.

The aim of this paper is to investigate the rate of the cases of the dry eye in RA patients as well as the possible connections between the persistence of RA and changes in the eye.

### Material and Methods

178 patients (166 women and 12 men) with classic or definite RA according to the ARA criteria

cured in the Institute of rheumatology in Niška Banja were examined. The average age of the examined patients was  $42 \pm 3.5$  and the average period of the disease was  $7.4 \pm 4.9$ .

Ophthalmologic examination included Schirmer's test biomicroscope checkup, fluorescein and rose bengal staining. Schirmer's test was most frequently used in making a diagnosis of KCS. This test defines the quantity of watery layer of precorneal film. Special filter strips (30\*5mm) were used. A paper strip is placed so that 5 mm of it is bent to the lower fornix and 25 mm lies across the lower eyelid. Wetness is measured after 5 min. The values below 10 mm show disturbed secretion of tears. Normal values are mainly between 11 and 20 mm (3,6).

The signs of corneal and conjunctival dryness can be easily accentuated by staining with rose bengal dye.

## Results

The structure of patients according to the age, sex and the disease persistence is shown in tables 1 and 2. It can be noticed that the greatest percentage of the patients was female –160 (90%), at the age of 41 to 50 (table 1) and that the persistence of the disease up to 5 years was in the biggest number of the patients – 65 (36.5%). All of 178 patients tested on RF, and 61.4% were

45% of patients. In 25% of patients with RA, we found moderate or severe ocular burning, foreign body sensation, pain and rose bengal corneal staining.

Keratoconjunctivitis sicca we found in patients with bigger damage of joints, with bigger radiologic progression and illness activity. All of those patients had positive RF.

## Discussion

In seropositive evolutive, erosive RA of longer persistence, systemic manifestations are present more often. The incidence of systemic manifestations among which there are the ones in the eye has a positive correlation with the presence of rheumatoid factors, the fact that which we have proved during the examination of our patients. The accepted viewpoint is that the systemic manifestations in RA are bad prognostic indicators because these patients have a bigger damage of joints shown radiologically, a bigger index of joint inflammation, while the patients with vasculitis show bigger rate of mortality. Special interest was paid to the analysis of eye manifestations: KCS which have been identified in 25% of examined RA patients and the obtained results fit in the already existing data about KCS and whose percentage is between 20 and 50% (1,2,3,4). KCS is found in the greater percentage in women, in seropositive

Table 1. The structure of patients according to the age and sex

| 21-30 |   | 31-40 |   | 41-50 |   | 51-60 |   | 61-70 |   | 71-80 |   | TOTAL |    |
|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|----|
| F     | M | F     | M | F     | M | F     | M | F     | M | F     | M | F     | M  |
| 18    |   | 26    | 2 | 52    | 6 | 39    | 5 | 22    | 3 | 3     | 2 | 160   | 18 |
| 18    |   | 28    |   | 58    |   | 44    |   | 25    |   | 5     |   | 178   |    |

Table 2. The structure of patients according to RA persistence

| Persistence (years) | <5   | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Total |
|---------------------|------|------|-------|-------|-------|-------|-------|
| n-patients          | 65   | 43   | 38    | 18    | 6     | 8     | 178   |
| % patients          | 36.5 | 24.2 | 21.3  | 10.1  | 3.4   | 4.5   | 100   |

seropositive but 38.6% were seronegative.

Schirmer's test was positive in 80 patients (45%). No wetness was found in 10 patients (5.5%), wetness up to 5 mm in 37 patients (20.8%), wetness from 6 to 10 mm in 37 patients (18.7%). Normal finding was in 98 patients (55%) (Table 3).

We found the positive tear film breakup time in

RA patients and in those with radiologically progressive disease, which also coincides with the previously obtained data (1,2,3,4). We would like to point out that one part of our KCS patients had kerostomia (Sjogren's syndrome) and there were also patients with lung fibrosis, diagnosed through the examination of lung function and by which we have proved that the previously examined cases of

Table 3. Schirmer's test in patients with RA

| Value (mm) | 0   | 1-5  | 6-10 | >10  | Total |
|------------|-----|------|------|------|-------|
| n-patients | 10  | 37   | 33   | 98   | 178   |
| % patients | 5.5 | 20.8 | 18.7 | 55.0 | 100   |

the entities (KCS and fibrose alveolitis) may accompany this rheumatoid disease (5). KCS as a systemic manifestation should be notified and expected in RA cases especially in patients with greater damage of joints, radiologic progression and illness activity.

### Conclusion

Through the examination of 178 patients with

rheumatoid arthritis in 45% of patients with rheumatoid arthritis we found the positive Schirmer test and tear film breakup time.

In 25% of patients with rheumatoid arthritis we found moderate or severe ocular burning, foreign body sensation, pain and positive rose bengal corneal staining. All of the patients had active seropositive rheumatitis, bigger rentgenografic progresion of the disease and positive rheumatoid factor.

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## KERATOKONJUNKTIVITIS SIKA KOD PACIJENATA SA REUMATOIDNIM ARTRITISOM

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*Kratak sadržaj:* Ova studija ispituje 166 žena i 12 muškaraca starosnog uzrasta od 19 do 65 godina (prosečna starost je 42 godine) sa reumatoidnim artritismom. Svi bolesnici su bili dijagnostikovani na osnovu kriterijuma Američkog reumatološkog društva. Keratokonjunktivitis sika smo dijagnostikovali Sirmerovim testom, testom vremena prekida suznog filma i bojenjem fluoresceinom i roze bengalom. Pozitivan Sirmerov test i vreme prekida prekornealnog suznog filma je nadjeno kod 45% obolelih od reumatoidnog artritisa. Promene na očima u vidu bolova, osećanja stranog tela i bojenje roze bengalom smo našli kod 25% obolelih.

*Ključne reči:* Keratokonjunktivitis sika, reumatoidni artritis

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