ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN-POLONIA
VOL. LXI, N1, 38 SECTIO D 2006

2nd Department of Ophthalmology
Department of Virusology
Department of Rheumatology, Medical University of Lublin

MAREK GERKOWICZ, MAŁGORZATA PIETRAŚ-TRZPIEL, MAŁGORZATA PARADOWSKA, EWA KOSIOR-JARECKA, MAŁGORZATA LATALSKA, MAGDALENA MAZUREK, MARCIN MAZUREK

The evaluation of stomatological and ophthalmological disorders in Sjögren's Syndrome

Sjögren Syndrome (SS) is one of the autoimmune diseases, where pathological reaction – infiltration of lymphocytes and plasmocytes, destroys the lacrimal and salivary glands, leading to dryness sensation in the eyes and mouth (13). In 1888 Haddena and Rowland described the SS for the first time. It was followed by discovering characteristic antibodies Ro (SS-A) and La (SS-B) in 1970. The test for rutin diagnosis of SS was available in 1990. As was showed, the immunological tests were not sufficient for the diagnosis of SS, because of the presence of these antibodies in other autoimmune diseases. There are also cases of SS, where we could not confirm the presence of the antibodies, despite the clinical evidence of SS (13).

The interest in SS involves at least three specializations: ophthtalmology, stomatology and rheumatology. Although the first mention about SS was found in ophthalmological papers, they did not involve rheumatological disorders. There are two clinical manifestations of the disease: primary SS in patients with undefined immunological diseases, and secondary SS in patients with defined autoimmunological disorders. The most frequent is rheumatoid arthritis, other associated conditions include lupus erythematosus, scleroderma, vasculitis, polymyositis, mixed connective tissue disease, polychondritis (11, 14).

According to the American-European classification the symptoms of SS include: 1) ophthalmological disorders: subjective and objective disorders which are found during examination; 2) stomatological disorders according to the questionnaire; 3) positive Schirmer I test after 5 min. fluorescent and rose Bengal test; 4) histological findings – according to the biopsy of salivary glands and evaluation of the elementary function of the glands; 5) immunological test – the presence of antinuclear antibodies and/or Ro(SS-A)/La(SS-B) antibodies or the presence of a few of these mentioned altogether.

The presence of three mentioned points suggests primary SS, the combination of a positive answer in the case of the first and second positions and a positive answer to two of the points out of 3, 4, 5 suggest secondary SS. The population's risk of the occurrence of SS is evaluated up to 4%, and in most cases patients suffering from this disease are women in over 90% (13). It should be mentioned that about 400 drugs with anticholinergic or similar adverse effects, may cause sicca syndrome, also diseases like lymphoma, sarcoidosis or RTG radiation of the head or neck can trigger the dryness of the eyes or mouth. For these reasons the diagnosis of SS could cause some difficulties, expecially in the case of negative immunological tests. Therefore, the purpose of our study was to determine if there is any correlation between changes in the eye and oral cavity in SS and in patients with dry eye syndrome without SS.

MATERIAL AND METHODS

The group of examined patients included 13 females at the age of 37–71 (mean 53), with confirmed SS. The comperative group included 11 females at the age of 39–84 (mean 67), with the dry eye syndrome. None of the patients suffered from other diseases like primary occurrence lymphoma, AIDS, sarcoidosis, Hepatitis C. None of the patients in both groups, used drugs with anticholinergic adverse effects or did not undergo X-ray therapy of the head or neck. All patients underwent stomatological examination, including the questionnaire concerning the character of the disorders: dryness in the oral cavity, dryness in oral cavity during speaking, difficulties in swallowing, difficulties in chewing, and burning sensation on the tongue and lips.

We evaluated the hygienic and dietetic habits of the patients, which can influence the progression of the disease. In oral examination we evaluated the mucous membrane according to the 3-degree scale of the hydration of mucous membrane in the mouth (5, 7). We also evaluated the presence of filiform papillas, tongue's smoothing and fissuring. The condition of the teeth was examined by using a mirror in the appropriate light. While evaluating the degree of the progression of the disease we used the CRF (8) number where C- means the teeth with one or few areas of the dental caries on the masticatory or contact surface of the teeth, R – the removed teeth due to the caries, F – the tooth with one or two fillings, but without secondary areas of caries. CRF is the sum of these mentioned numbers.

All patients underwent ophthalmological examination, including the interview about the dryness in the eyes, a gritty or sandy sensation in the eyes, the presence of red eyes, difficulties with opening the eyes in the morning and also about too much crusting on their lashes. We also evaluated the conjunctival folds, by using Lipcoff scale, we performed the Shirmer I test and non-invasive break up time – NIBUT by using Tear-Scope device.

A number of the parameters underwent statistical analysis. The differences between examined parameters were determined by using Mann-Whitney test. The relationship between parameters was evaluated by using Spearman test.ö

GOALS

We confirmed the statistical differences between the age of patients with SS and without SS (p=0.034). The grade of dry sensation in the mouth is shown in Figure 1. The tongue condition is shown in Figure 2 and the mouth symptoms of the disease in Figure 3.

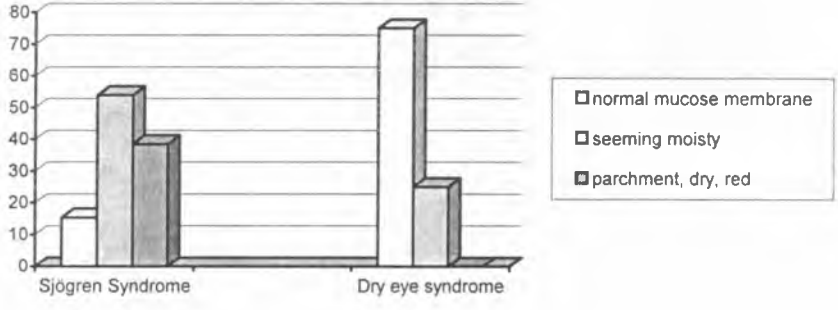

Fig. 1. The grade of dryness of mucose membrane in oral cavity

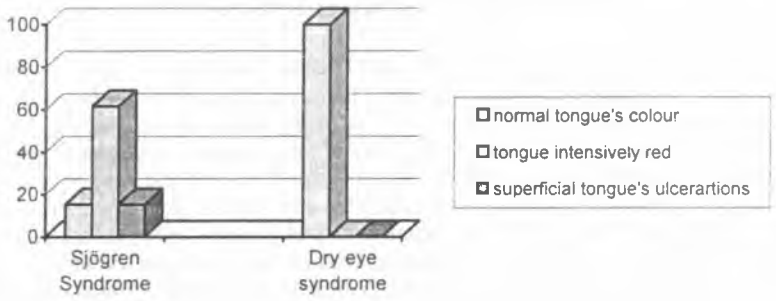

Fig. 2. The evaluation of the tongue

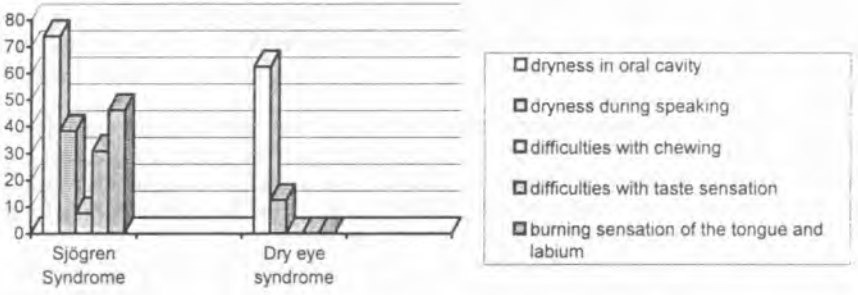

Fig. 3. The subjective sensations in oral cavity

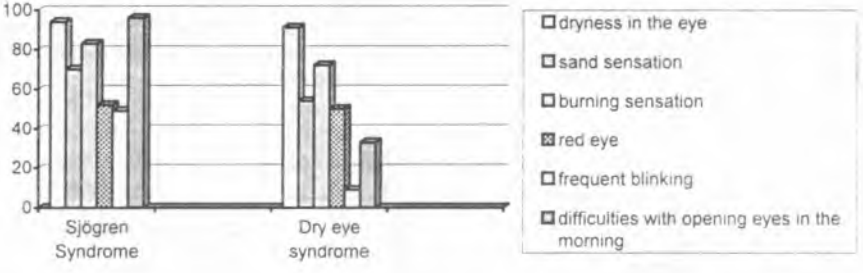

Fig. 4. The subjective sensations in the eyes

The teeth condition was similar in patients with and without SS. We found out the relationship between the age and retained teeth ($p=0.018$), between the age and filled teeth ($p=0.05$) and also between the occurrence of caries and filled teeth ($p=0.05$) in patients with SS. We also found out the relationship between the removed and retained teeth in patients suffering from SS ($p=0.00001$). In the comparative group we did not find the statistical differences and relationships between evaluated parameters. The CRF number in patients with SS was 30.1, while in patients without SS – 27.2.

Through ophthalmological examination we confirmed the differences between NIBUT (non-invasive break-up time) in patients with and without SS ($p=0.00005$). We did not find the

statistical differences between Schirmer I test in both groups. We found the relationship between NIBUT and the evaluation of the conjunctival folds in patients with SS (p=0.008). In the comparative group we did not give evidence for statistical differences and relationships between parameters. The subjective symptoms are shown in Figure 4.

We did not find relations between ophthalmological and stomatological parameters in both groups.

DISCUSSION

The SS is one of the autoimmune diseases which trigger the dysfunction of different kinds of organs. One of the earliest signs of Sjögren's Syndrome are changes in the oral cavity and eyes. The dry symptoms may also appear in other mucous membranes, for example in the nose, pharynx, lungs, vagina etc. If the symptoms of the disease are mild it could be misdiagnosed or delayed for many years.

In Poland there are a few references to the evaluation of CRF number where: C – means teeth with one or few areas of caries on the masticatory or contact surface of the teeth, R – tooth removed because of the caries, F – tooth with one or two fillings, but without secondary areas of caries. The sum of these mentioned numbers makes the CRF number.

Greater occurrences of dental caries can be observed in SS (1, 9, 10). In our paper we give evidence of the relationships between stomatological parameters and the age of patients with SS. It confirms the fact that the reduced secretion of saliva caused the increased presence of caries. The fact that we did not observe it in patients with dry eye syndrome, confirmed a smaller influence of age on the occurrence of pathological signs in the oral cavity. In Baudet-Pommel study patients with SS lost teeth more quickly, in most cases before the age of 45 in 66%, than healthy volunteers (2). Other researchers observed that the intensity of caries defined by CRF number in patients with SS is evaluated as 26.4 while in control group it is 22.0. The mean number of retained teeth in these patients was evaluated as 16.3, while in control group it was 24 (4). The number is comparable in these groups in our paper. It confirmed the fact that patients with SS lose teeth more rapidly as a result of paradental diseases or dental caries. The tongue and the mucous membranes of the oral cavity lose the glistening appearance, patients have difficulties in swallowing, they have disorders while sensing different kinds of tastes, and they also experience dryness in the mouth, difficulties on phonation or sustaining a conversation. All researchers agree that in patients with SS destruction of the glands aiming of manifestation of symptoms as a result of the disappearing salivary pool, which makes patients drink water even at night, the tongue becomes erythematosed, fissured or ulcerated. At this stage patients may exhibit multiple dental caries, an increased incidence of oral candidiasis and dysphagia. A larger occurrence of these mentioned symptops in patients with SS was confirmed in our study (Fig 1, 2, 3).

There was a significant difference between the age of patients with SS and the age of patients with dry eye syndrome without SS which seems to be an additional factor helpful in the diagnosis of SS. During ophthalmological examination we discovered significant differences between NIBUT in patients with and without SS. It confirmed the fact that in SS not only the lacrimal glands are destroyed but also the Meibomian glands are under the influence of the disease. According to our study Sjinazoki et al. observed dysfunction of Meibomian glands by using meibography in patients with SS. They did not observe significant differences in Schirmer I test in both groups (12). The case was similar in our study. Other researchers discovered that changes in lacrimal proteins could cause the dry eye syndrome in patients with SS (7). Interesting is the fact of the presence of significant differences between NIBUT and evaluation of conjunctival folds in patients with SS and its absence in patients without SS. It confirmed a larger influence of a lipid layer on the examined parameters. Patients with SS more frequently than patients without SS, complain about difficulties with opening eyes in the morning (about 95%) and they are made to blink very often (about 50% patients with SS). It may confirm a larger instability of the tears film in patients with SS than in patients with dry eye only. In the case of the remaining examined parameters the answers were similar in both groups.

We did not confirm any significant relationship between ophthalmological and stomatological parameters in patients with SS. The reason for this we could explain through different dynamics of pathological processes in the eyes and in the oral cavity. It is clear that particular ophthalmological and stomatological examinations in most cases may help in proper diagnosis of SS equally with the immunological tests (3).

CONCLUSIONS

1. The deterioration of the dental condition in patients with SS depends on the duration of the disease.

2. The absence of the protective function of the saliva in patients with SS causes greater occurrences of pathological findings concerning labial epithelium, angles of the lips and the tongue.

3. The shortness of the NIBUT in patients with SS gives evidence larger instability of tears compared to patients with dry eye syndrome without SS.

4. The absence of the relationship between the examined ophthalmological and stoma-tological parameters testified to different dynamics of the pathological process in mouth in comparison with the eyes.

REFERENCES

1. Atkinson J. C. et al.: Zespół Sjögrena. Mag. Stom., 8, 26, 4, 1993.
2. Baudet-Pomel M et al.: Early dental loss in Sjogrens Syndrome. Oral Surg. Oral Med. Oral Pathol., 78, 181, 1994.
3. Bron A.J.: Diagnosis of dry eye. Survey of Ophthalmology, 221, 2001.
4. Cackowska-Lass A.: Główne procesy chorobowe jamy ustnej u chorych z zespołem Sjögrena. Praca doktorska, 2002.
5. Field E.A. et al.: The establishement of a xerostomia clinic: a prospective study. Br. J. Oral Maxillofacial Surg., 35, 96, 1997.
6. Janssen P.T., van Bijsterveld O.P.: Tear fluid of proteins in Sjögren Syndrome. Scand. J. Rheumatol. (Suppl.), 61, 224, 1986.
7. Jańczuk Z.: O problemach diagnostycznych i leczniczych w stanach niedoborowych śliny. Lek w Polsce, 3, 75, 2, 1997.
8. Jańczuk Z.: Próchnica zębów. Biblioteka Stomatologa pod red. Z. Jańczuk, E. Szymaniak, PZWL, 9, Warszawa 1994.
9. Laskus-Perendyk A. et al.: Schorzenia błony śluzowej jamy ustnej związane z zaburzeniami ilościowymi i jakościowymi wydzielania śliny. Mag. Stom., 2, 36, 1995.
10. McArtur C. et al.: Dental professionals role in diagnosing Sjögren's Syndrome. General Dentistry, 62, 1997.
11. McKinnon S.G., Gentry L.R: Systemic diseases involoving the orbit. Seminars inultasound, CT, and MRI, 19, 292, 1998.
12. Shimazaki J. et al.: Meibomian Gland dysfunction in patients with Sjogren Syndrome, Ophthtamolol., 105, 1485, 1998.
13. Venables P.J.W.: Sjögren's Syndrome. Best practice and research clinical rheumatology, 18, 313, 2004
14. Vivino F.B.: Diagnosis and treatment of Sjögren's Syndrome. The female patient, 24, 65, 1999.

SUMMARY

The purpose of our study was to determine, if there is any correlation between changes in the eye and oral cavity in SS and in patients with dry eye syndrome without SS. The group of examined patients included 13 females at the age of 37–71 (mean 53), with confirmed SS. The comperative group included 11 females at the age of 39–84 (mean 67), with the dry eye syndrome. All patients underwent stomatological and ophthalmological examination. We confirmed the statistical differences between the age of patients with SS and without SS. We found out the relationship between the age and retained teeth, between the age and filled teeth and also between the occurrence of caries and filled teeth in patients with SS. Through ophthalmological examination we confirmed the differences between NIBUT (non-invasive break-up time) in patients with and without SS. We found the relationship between NIBUT and the evaluation of the conjunctival folds in patients with SS. The deterioration of the dental condition in patients with SS depends on the duration of the disease. The absence of the protective function of the saliva in patients with SS causes greater occurrences of pathological findings concerning labial epithelium, angles of the lips and the tongue. The shortness of the NIBUT in patients with SS gives evidence for larger instability of tears compared to patients with dry eye syndrome without SS. The absence of the relationship between examined ophthalmological and stomatological parameters testified to different dynamics of the pathological process in mouth in comparison with the eyes.

Ocena zaburzeń stomatologicznych i okulistycznych w zespole Sjögrena

Celem badań była ocena zależności pomiędzy zmianami występującymi w jamie ustnej w porównaniu ze zmianami występującymi w przednim odcinku oka u pacjentów z potwierdzonym wtórnym zespołem Sjögrena i zespołem suchego oka. Grupa badanych pacjentów obejmowała 13 kobiet w wieku 37–71 lat (średnio 53). Grupę porównawczą stanowiło 11 kobiet w wieku 39–84 lat (średnio 67). U wszystkich pacjentek przeprowadzono badanie stomatologiczne i okulistyczne. Stwierdzono istotnie statystyczną różnicę pomiędzy wiekiem chorych z zespołem Sjögrena a zespołem suchego oka. Potwierdzono istotnie statystyczne zależności pomiędzy wiekiem chorych a zębami usuniętymi; pomiędzy wiekiem a zębami zachowanymi; pomiędzy wiekiem a zębami wypełnionymi, pomiędzy zębami usuniętymi a zachowanymi oraz pomiędzy występowaniem próchnicy a zębami wypełnionymi. W części obejmującej oceną okulistyczną stwierdzono istotnie statystyczną różnicę pomiędzy czasem NIBUT u chorych z SS w porównaniu z chorymi z zespołem suchego oka. W grupie pacjentek z SS stwierdzono zależność pomiędzy NIBUT a oceną fałdów spojówki w skali Lipcof. Pogorszenie stanu uzębienia u chorych z zespołem Sjögrena zależy od czasu trwania choroby. Brak ochronnego działania śliny u pacjentów z zespołem Sjögrena powoduje zwiększony odsetek zjawisk patologicznych dotyczących nabłonka warg, kątów ust i języka. Skrócenie czasu NIBUT u chorych z zespołem Sjögrena świadczy o większej niestabilności filmu łzowego w porównaniu z chorymi z izolowanym zespołem suchego oka. Brak zależności pomiędzy badanymi parametrami okulistycznymi a badanymi parametrami stomatologicznymi w grupie pacjentek z zespołem Sjögrena przemawia za różną dynamiką procesu chorobowego w oczach i w jamie ustnej.