Rheumatoid arthritis is a chronic systemic inflammatory disease marked by a symmetric, peripheral polyarthritis. It is associated with various extra-articular organ manifestations including subcutaneous nodules, pericarditis, major cutaneous vasculitis, ocular manifestations, hematological abnormalities etc. The well documented ocular manifestations of RA include kerato-conjunctivitis sicca , anterior uveitis, episcleritis, scleritis, scleromalacia perforans, peripheral ulcerative keratitis, corneal filamentary keratitis, retinal vasculitis. The Aim of our study was to identify the rheumatoid arthritis patients with ocular involvement presenting at tertiary care centre of Kumaon region of Uttarakhand. We examined 97 patients with diagnosis of RA. The ocular examination included; best corrected visual acuity, slit lamp examination, Schirmer’s test, tear break-up time, indirect ophthalmoscopy and fundus photography in patients with retinal involvement. In this study, the most common manifestation associated with RA was keratoconjunctivitis sicca followed by filamentary keratitis(7.86%) and uveitis (7.86%), scleritis (5%), episcleritis(3%). The least common was panophthalmitis (0.1%). Ocular manifestation among RA patients was found to be very common, i.e. 91.75% (89 cases, out which 62 were females).

INTRODUCTION
Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease, marked by a symmetric, peripheral polyarthritis. It has been associated with a number of extra-articular organ manifestations, such as fatigue, subcutaneous nodules, pericarditis, pleuritis, major cutaneous vasculitis, peripheral neuropathy, ocular manifestations, glomerulonephritis, hematological abnormalities. It is an autoimmune disorder but the etiology of this disease is still unknown.

Rheumatoid arthritis affects middle age women three times more often than the men in a percentage of 0.5% - 2% of the general population.

The well documented ocular manifestations of RA include keratoconjunctivitis sicca (dry eye syndrome), anterior uveitis, episcleritis (episcleral nodulosis), scleritis, scleromalacia perforans, peripheral ulcerative keratitis, corneal filamentary keratitis. There are few rare complications associated with RA, such as, granular opacities with peripheral vascularisation of corneal stroma, marginal furrows of cornea, choroiditis, optic neuritis, disc and macular edema due to posterior scleritis, retinal vasculitis, secondary retinal detachment.

Keratoconjunctivitis sicca (dry eye disease), the most commonly found ocular sign in the patients of RA. The associated symptoms and signs are foreign body sensation, conjunctival hyperaemia (red eye), burning sensation of the eyes, ocular pain and blurred vision.

Episcleritis is mild, self limiting, recurrent disease. Occurs in two for ms: the simple episcleritis and the nodular episcleritis. The simple (diffuse) episcleritis is more common.

Scleritis is common in patients of rheumatoid arthritis. Scleritis may be diffuse, nodular, or necrotizing. Necrotizing scleritis with inflammation is the most destructive. In addition to the ocular findings in non-necrotizing scleritis, avascular areas of the sclera or necrosis may also be seen, surrounded by scleral edema. Scleritis has a gradual onset with a dull, boring pain which may radiate into cheek, eyebrows and temples, blurring vision and photophobia, tender nodules over the sclera. Corneal disease is most commonly associated with keratocconjunctivitis sicca but it can be an isolated complication. Keratitis symptoms include, pain with photophobia, foreign body sensation, redness, watering and decreased vision. Uveitis (anterior uveitis, intermediate uveitis, posterior uveitis choroiditis, panuveitis), these are the several forms of intra-ocular inflammation. Involvement of retina primarily is very rare in patients of rheumatoid arthritis. However cases of retinal vasculitis, bilateral choroidal nodules and secondary retinal detachment have been reported earlier.

Aim of our study was to present the frequency of ocular involvement in cases of rheumatoid arthritis in kumaon region of Uttarakhand.

MATERIAL AND METHODS
97 consecutive patients of rheumatoid arthritis, irrespective of their age and sex, attending ophthalmology clinic of Sushila Tiwari Memorial Hospital, Haldwani, from November 2017- November 2019, were evaluated for various oculociliary lesions and a detailed history was taken and thorough oculomaxillary examination was done. The ocular examination included; best corrected visual acuity, slit lamp examination, Schirmer’s test, tear break-up time, indirect ophthalmoscopy and fundus photography in patients with retinal involvement.

OBSERVATIONS AND RESULTS
In this cross sectional study of 97 patients, the cases were within the age range of 14-85 years. RA is found to be more common in females than males.

In our study of 97 patients 72 were females and 25 were males, i.e 74% and 26% respectively.

Figure 1. showing gender distribution in rheumatoid patients.

The maximum number of patients presented with ocular symptoms were in the group of 1-5 years of disease activity.

The most common systemic disease presenting in the RA patients was found to be Hypertension followed by Secondary Sjogren and Tuberculosis.
of keratoconjunctivitis sicca is between 11.6% to 50% in literature. The incidence of keratoconjunctivitis sicca (66.29% out of patients with ocular involvement). The incidence of keratoconjunctivitis sicca in rheumatoid arthritis patients was keratoconjunctivitis sicca (91.75%) (89 cases, out of which 62 were females). In the study by Charanya et al., it was found to be 52% whereas in study by Reddy et al., it was only 39%.

In the present study, the incidence of ocular manifestation among RA patients was very common, i.e. 91.75% (89 cases, out of which 62 were females). In the study by Reddy et al., it had 9 cases of posterior subcapsular cataract bilaterally who were on long term oral corticosteroids and 11 of them had developed bilateral posterior subcapsular cataract. The intraocular pressure was normal in all of them. The study by Reddy et al. had 9 cases of posterior subcapsular cataract bilaterally who were on long term oral steroids treatment, and this observation has been also well documented by Oglesby et al. and Williamson et al.

### DISCUSSION

Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease, the cause of which has not been known. The extra-articular involvement of organs such as the skin, heart, lungs, and eyes is significant, and is present in 10-20% of patients, with more frequent association in seropositive patients.

In the present study 97 patients with diagnosis of rheumatoid arthritis were included. Detailed ophthalmological examination under slit lamp biomicroscopy was done. The tests for dry eye disease were performed in all the patients with or without any presenting symptoms. The tests included Schirmer’s test and TBUT (fluorescein tear film breakup time), and the values were noted for each test and then graded into severity of dry eyes using the TFOS-DEWS 2 (TFOS Tear Film & Ocular Surface Society Dry Eye Workshop 2) classification system. The slit lamp examination of each patient was performed to look for entities like episcleritis, scleritis, keratitis etc, and fundus examination of every patient was done by direct and indirect ophthalmoscopy for any noted retinal and optic nerve involvement. The ocular lesions were noted and categorized according to the age of the patient, gender, treatment and duration of disease process, and also association with other systemic diseases.

A total of 72 females and 25 males were included in this study, thus a sex (F/M) ratio of 2.8:1. Our study showed that majority of the patients with RA were in their fourth and fifth decades which comprised i.e. 43 cases (37 females and 6 males).

The most common symptoms with which the RA patients presented in the eye OPD was Dryness and Foreign body sensation (51 cases). 13 out of 97 patients had no ocular symptom (13.4%).

In the present study the, the incidence of ocular manifestation among RA patients was found to be very common, i.e. 91.75% (89 cases, out of which 62 were females). In the study by Charanya et al., it was found to be 52%, whereas in study by Reddy et al., it was only 39%.

In the table 2, it has been shown that the most common ocular manifestation in rheumatoid arthritis patients was keratoconjunctivitis sicca (66.29% out of patients with ocular involvement). The incidence of keratoconjunctivitis sicca is between 11.6% to 50% in literature.

The most common ocular manifestations in this study were filamentary keratitis (7.86%) and uveitis (7.86%). The least common was panophthalmitis (0.1%). The incidence of retinal lesions was found to be 4% among the patients having ocular involvement.

### Table 2 - OCULAR MANIFESTATIONS

<table>
<thead>
<tr>
<th>Table 2- OCULAR MANIFESTATIONS</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keratoconjunctivitis Sicca (KCS)</td>
<td>12</td>
<td>47</td>
<td>59</td>
</tr>
<tr>
<td>Peripheral Ulcerative Keratitis (PUK)</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Filamentary keratitis</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Episcleritis</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Scleritis</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Uveitis</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Panophthalmitis</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Retinal lesions</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>62</td>
<td>89</td>
</tr>
</tbody>
</table>

The second most common ocular manifestations in this study were found to be filamentary keratitis (7.86%) and uveitis (7.86%). The least common was panophthalmitis (0.1%). Episcleritis was diagnosed in only 3 (3%) patients of rheumatoid arthritis in this study. All the patients diagnosed with episcleritis were females.

Scleritis was present in 5 (5%) patients. Nodular scleritis was present in one patient while diffuse scleritis was present in four (4) cases.

The retinal involvement was found in 4 patients of the total 97 patients. One patient was of retinal vasculitis, 2 patients were of retinal haemorrhage and one patient of secondary exudative retinal detachment. The incidence of cataract formation was also found to be high in the patients taking steroid treatment for rheumatoid arthritis. In our study, 47 patients out of 97 had cataract (29.18%). Out of these 47 patients, 27 patients were receiving long term oral corticosteroids and 11 of them had developed bilateral posterior subcapsular cataract. The intraocular pressure was normal in all of them. The study by Reddy et al. had 9 cases of posterior subcapsular cataract bilaterally who were on long term oral steroids treatment, and this observation has been also well documented by Oglesby et al. and Williamson et al.
In a study of 97 cases of rheumatoid arthritis 89 patients were found to have various ocular lesions. The following conclusions can be drawn from the study.

1. Ocular involvement in rheumatoid arthritis is very common in the kumaon region of Uttarakhand. (91.75%)

2. Keratoconjunctivitis Sicca is the most common ocular manifestation associated with RA in the Kumaon region of Uttarakhand. (60.85%)

3. The frequency of the ocular lesions is related to the duration of RA.

4. Routine ophthalmic examination may help to detect the early onset of ocular lesions in patients of rheumatoid arthritis.

REFERENCES


18. C Charanya, Achanti Swathi, Siddhartha Jamati, R Pandurangan . Postgraduate, Department of Ophthalmology, Chettinad Hospital and Research Institute, Chennai, Tamil Nadu, India, Associate Professor, Department of Ophthalmology, Chettinad Hospitals and Research Institute, Chennai, Tamilnadhu.


