ANKYLOSING SPONDYLITIS: OPHTHALMOLOGIST PLAYS A MAJOR CRUCIAL ROLE!

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ABSTRACT

BACKGROUND

Ankylosing spondylitis (AS) is a chronic inflammatory systemic disorder affecting the axial skeleton with chronic pain and stiffness in the lower back or buttocks region and progressive limitation of spinal movements. Many patients exhibit extra-articular manifestations and anterior uveitis is a common form of extra articular manifestation of AS. Other findings are episcleritis, scleritis, peripheral ulcerative keratitis, retinal vasculitis, dry eye, cataract and secondary glaucoma. Sometimes ocular signs are the only presentation. It is very challenging for an ophthalmologist to carefully examine the patients of AS so that permanent bony deformity is minimised. We wanted to evaluate the magnitude of ocular manifestations in patients suffering from AS and establish the statistical significance of age of patients and determine the frequency of ocular manifestations for epidemiological purposes.

METHODS

This is a cross sectional observational study done among one hundred and forty-four patients (n=144) with AS conducted between December 2018 and July 2019. Slit lamp biomicroscopy with 90 D Volk lens was done for anterior and posterior segment examination. Gonioscopy, Applanation Tonometry, Automated Perimetry and Indirect Ophthalmoscopy were done. Schirmer's and TBUT tests were done.

RESULTS

Anterior uveitis (30%) was the most common ocular manifestation followed by vitritis (18%), cataract (15.2%), episcleritis and scleritis (7.6%), dry eye (6.2%), retinal vasculitis (8%) and peripheral ulcerative keratitis (5%). Males are more commonly affected. The duration of disease was found to be statistically significant ($p<0.001$) when correlated with age groups with patients in the age group of >60 years and with respect to unilateral/bilateral presentation of ocular manifestations ($p=0.016$).

CONCLUSIONS

Ophthalmologist has a great role for diagnosing of AS. Patients usually come to ophthalmology OPD for management of ocular symptoms with undiagnosed AS and physician must be cautious while assessing ocular signs and symptoms for suspecting AS. As a result, irreversible bony deformities can be minimized as much as possible.

KEYWORDS

Ankylosing Spondylitis, Anterior Uveitis, Ocular Manifestations

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BACKGROUND

Ankylosing spondylitis (AS) is a chronic inflammatory systemic disorder of unknown cause that primarily affects the axial skeleton. Peripheral joints and extra-articular joints are also frequently involved. Presentation is commonly in the third and fourth decades with gradual onset of pain and stiffness in the lower back or buttocks region and progressive limitation of spinal movements. The pain worsens with rest, improves with activity, and is accompanied by morning stiffness that lasts 30 minutes or longer. Cardiac complications are rare.

Ankylosing spondylitis is often referred to as seronegative spondyloarthropathy, in that rheumatoid factor is not present. Men are three times more likely to be affected than women.[1] AS is a systemic disease; therefore, many patients exhibit extra-articular manifestations and anterior uveitis is common form of them.[2,3,4] It can affect more than forty percent of chronic AS. Attacks are typically unilateral. Bilateral involvement is rare.[5,6] These tend to recur, often in the opposite eye. Articular involvement and severity of ocular manifestations are not correlated. In case of acute pattern, patients usually present with triad of pain, redness and photophobia. High fibrin content in anterior chamber and hypopyon (12-15%) are also important features.[7,8,9,10,11] Other findings are episcleritis, scleritis, peripheral ulcerative keratitis, retinal vasculitis, dry eye. Cataract and secondary glaucoma are also another ocular manifestation. So,

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physician must be cautious for assessing each and every ocular signs and symptoms for suspecting AS and referred to Rheumatologist for further investigations for confirmation. As a result, irreversible bony deformities can be minimized as much as possible.

We wanted to evaluate the magnitude of ocular manifestations in patients suffering from AS and establish a statistical significance of age of patients to frequency of ocular manifestations for epidemiological purpose.

METHODS

Study Design

Cross sectional observational study.

Study Subjects

Patients diagnosed with AS who came to ophthalmology OPD for ocular complaints were evaluated after a thorough ophthalmological evaluation. These patients were studied in the Department of Ophthalmology & Rheumatology Clinic, R.G. Kar Medical College & Hospital between December 2018 and July 2019.

Sample Size

144.

Inclusion Criteria

- All patients diagnosed as having AS referred from Rheumatology clinic.

Exclusion Criteria

- Patients with uncertain diagnosis of AS.
- Patients with other autoimmune disorders
- Patients with history of malignancy/history of chemotherapy/history of exposure to radiation
- Drug induced ocular manifestations and other effects induced by chronic immunosuppression.
- Patients with the history of any ocular infection, ocular surgery and trauma were also excluded.

Ophthalmological Examination

- Best corrected visual acuity (BCVA) was tested using Snellen's chart or E chart, depending upon patient's ability. Each eye was tested separately with or without glasses with the patient at 6-meter distance.
- Colour vision recording with Ishihara's pseudoisochromatic charts.
- Corneal staining with Fluorescein stain.
- Schirmer's test for detection of dry eye.
- Tear breakup time (TBUT) to assess for evaporative dry eye disease.
- Slit lamp biomicroscopy for anterior segment examination.
- Applanation tonometry for IOP measurement.
- Goldmann two mirror gonioscopy.
- Slit lamp biomicroscopy with 90 D Volk lens.
- Indirect Ophthalmoscopy for retina examination.
- Automated Perimetry.
- Fundus Fluorescein Angiography only for those patients with fundus changes.
- Blood Tests: Complete haemogram for Hb, TC, DC, ESR, platelet count, BT, CT, Serology, blood sugar.

Statistical Methods

Categorical variables are expressed as number of patients and percentage of patients and compared across the groups using Pearson's Chi Square test for Independence of Attributes/ Fisher's Exact Test and odds ratio as appropriate. Continuous variables are expressed as Mean, Median and Standard Deviation and compared across the groups using Mann-Whitney U test. SPSS version 20 has been used for the analysis. An alpha level of 5% has been taken, i.e. if any p value is less than 0.05 it has been considered as significant.

RESULTS

In the present study, 144 patients were studied. Out of these, 26(18.1%) were female and 118(81.9%) male as represented in Table 1. The average age in the study was 45.66 ± 17.03 years. The average age for females was 40.23 ± 18.16 years and for males was 46.86 ± 16.62 years. This study was conducted on a study population of 144 coming to Ophthalmology outdoor at R. G. Kar Medical College and Hospital in West Bengal, India.

Gender	Frequency	Percent (%)
Female	26	18.1
Male	118	81.9
Total	144	100.0

Table 1. Gender Distribution of Study Population

Gender	Mean	Std. Deviation
Female	40.23	18.16
Male	46.86	16.62

Table 2. Mean Age in Males and Females

Descriptive Statistics				
	Minimum	Maximum	Mean	Std. Deviation
Age in years	21	90	45.66	17.03

Table 3. Descriptive Statistics

Age in Years	Frequency	Percent
21-40	58	40.3
41-60	59	41.0
>60	27	18.8
Total	144	100.0

Table 4. Age Wise Distribution of Study Population

Ocular Manifestations	Number of Individuals	Frequency (%)
Anterior Uveitis	44	30
Episcleritis	11	7.6
Scleritis	11	7.6
Dry Eye	9	6.2
Posterior subcapsular cataract	22	15.2
Vitritis	26	18
Oedematous retina	15	10
Retinal vasculitis	12	8
Secondary glaucoma	14	9
Peripheral ulcerative keratitis	8	5

Table 5. Percentage of Various Ocular Manifestations

Unilateral or Bilateral	Frequency	Percent
Unilateral	18	34.0
Bilateral	35	66.0
Total	53	100.0

Table 6. Percentage of Unilateral/Bilateral Presentation of Ocular Manifestations

Multiple Ocular Manifestations	Frequency	Percent
No	32	60.4
Yes	21	39.6
Total	53	100.0

Table 7. Percentage of Multiple Ocular / Single Ocular Manifestations

Duration of Disease in Years			
Ocular Manifestations	**Mean**	**Median**	**Std. Deviation**
No	3.82	3.00	2.46
Yes	6.40	6.00	2.46
p Value	<0.001		
Significance	Significant		

Table 8. Mean Duration of Disease in Years in Patients with and Without Ocular Manifestations

Duration of Disease in Years			
Unilateral or Bilateral	**Mean**	**Median**	**Std. Deviation**
Unilateral	5.22	5.00	1.80
Bilateral	7.00	7.00	2.56
p Value	0.016		
Significance	Significant		

Table 9. Duration of Disease in Patients in Years with Unilateral and Bilateral Presentation of Ocular Manifestations

Duration of Disease in Years			
Multiple Ocular Manifestations	**Mean**	**Median**	**Std. Deviation**
No	6.09	6.00	2.43
Yes	6.86	6.00	2.50
p Value	0.287		
Significance	Not Significant		

Table 10. Mean Duration of Disease in Years in Patients with Multiple and Single Ocular Manifestation

		Gender		Total	p Value	Significance
		Male	**Female**			
Ocular manifestations	No	18(69.23)	73(61.86)	91(63.19)	0.481	Not Significant
	Yes	8(30.77)	45(38.14)	53(36.81)		
Total		26(100)	118(100)	144(100)		

Table 11. Significance of Gender in Relation to Presentation of Ocular Manifestations

		Gender		Total	p Value	Significance
		Female	**Male**			
Unilateral or Bilateral	Unilateral	5(62.5)	13(28.89)	18(33.96)	0.104	Not Significant
	Bilateral	3(37.5)	32(71.11)	35(66.04)		
Total		8(100)	45(100)	53(100)		

Table 12. To Show the Significance of Gender in Unilateral and Bilateral Presentation of Ocular Manifestations

		Gender		Total		
		Female	**Male**		**p Value**	**Significance**
Multiple Ocular Manifestations	No	6(75)	26(57.78)	32(60.38)	0.455	Not Significant
	Yes	2(25)	19(42.22)	21(39.62)		
Total		8(100)	45(100)	53(100)		

Table 13. To Study the Significance of Gender in Relation to Multiple and Single Ocular Manifestations

DISCUSSION

AS varies from asymptomatic to various extra articular manifestations. Presentation is usually 30 to 40 years with gradual onset of pain and stiffness in the lower back or buttocks region and progressive limitation of spinal movements. The pain is accompanied by morning stiffness lasting 30 minutes or longer. Up to 90% of patients with AS are positive for HLA-B27. Family history has significant role.

The ophthalmologist has a key role for early prediction of AS. From our study it clearly revealed that males were most commonly affected (81.9%). The minimum age was 21 years and the maximum age was 90 years. 58(40.3%) patients were in the 21-40 age group, 59(41%) patients were in the 41-60 age group and 27(18.8%) patients were above 60 year. Average duration of disease in males was 4.08±2.73 years and in females was 4.92±2.74 years. The difference however was found statistically insignificant (p=0.129). The duration of disease was found to be statistically significant (p<0.001) when co related with age groups with patients in the age group >60 years having a mean duration of 7.41±2.63 years. The duration of disease was found to be statistically significant (p=0.016) with respect to unilateral/ bilateral presentation of ocular manifestations as shown in Table 12. The duration of disease was found to be statistically insignificant (p=0.287) with respect to presentation of multiple ocular manifestations. No statistical significance was found between gender and ocular manifestations (p=0.481), gender and unilateral / bilateral presentation of ocular manifestations (p=0.104) and gender and multiple ocular manifestations (p=0.455).

Most common ocular finding was acute anterior uveitis (30%).[2,4,5,6] It was usually unilateral with high chance of recurrence in the contralateral eye. Patients gave history of ocular pain, blurring of vision, photosensitivity. Usually uveitis was non granulomatous in nature. In severe cases, there were some history of hypopyon, posterior synechiae, iris atrophy. Men were usually more affected than female.[1] It usually lasted for short duration of time. Peripheral ulcerative keratitis (PUK) presented in five percent cases, refers to a crescent shaped destructive inflammation of the juxta limbal corneal stroma associated with an epithelial defect, presence of stromal inflammatory cells, and stromal degradation mediated by proteolytic enzymes released from inflammatory cells. Patients usually presented with pain, photophobia and watering. AS was associated with retinal vasculitis in eight percent cases. Patients might be asymptomatic or presented with dimness of vision, floaters, decreased colour sensitivity. White sheathing or cuffing of the affected vessels was seen in some cases.

Dry eye was seen in 6.2% cases in our study. The cause was possibly lymphocytic and plasma cell infiltration and destruction of acini of the lacrimal glands. Patients gave history of itching, foreign body sensation, burning and photophobia. Posterior subcapsular cataract (15.2%) and secondary glaucoma (9%) were also another ocular manifestation possibly due to long standing uveitis.

CONCLUSIONS

Ophthalmologist has a great role in diagnosing AS. Patients usually come to ophthalmology OPD for management of ocular symptoms with undiagnosed AS and physician must be cautious while assessing ocular signs and symptoms for suspecting AS and should refer the patient to Rheumatologist for further evaluation for confirmation as soon as possible. As a result, irreversible bony deformities can be minimized.

Abbreviations

AS: Ankylosing Spondylitis, BCVA: Best Corrected Visual Acuity, OPD: Outpatient Department, TBUT: Tear-film Break-Up Time, PUK: Peripheral Ulcerative Keratitis, PPBS: Post Prandial Blood Sugar, BT: Bleeding Time, CT: Clotting Time, BP: Blood Pressure

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