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The Study of Various Types of Ocular Hypersensitivity Reaction in Tertiary Care Hospital

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ABSTRACT

Ocular hypersensitivity reaction (OHR) includes several clinically different conditions that can be considered as hypersensitivity disorders of the eye. The classification of these conditions is very complex. The diagnosis of OHR is usually based on clinical history and signs and symptoms and also certain tests. There are very few studies on types of OHR. So the present study was conducted to find the epidemiology of individual type OHR, age and sex distribution and correlate the types of OHR with age, sex, bilateral or unilateral, systemic involvement and severity of illness. 50 patients of OHR were studied in which male (52%) predominance sees with most common age group involved was 20 to 30 years (40%), whereas sex distribution in individual type showed female predominance in phlyctenular conjunctivitis (60%) and collagen vascular disease (63%). In all cases of OHR allergic conjunctivitis (13/50) was most common followed by vernal keratoconjunctivitis (5/50).

KEYWORDS :

Introduction

A hypersensitivity reaction is defined as a state of altered reactivity in which the body mounts an amplified immune response to a substance. In 1963, Gell and Coombs classified hypersensitivity reactions into four different groups (Types I, II, III, and IV). Clinically, it is difficult to distinguish between the four types of hypersensitivities as they do not necessarily occur in isolation from each other. Biologically, Types I, II, and III hypersensitivities are mediated by antibodies, whereas, Type IV is mediated by T cells and macrophages (1).

Conjunctiva is a frequent site of such reactions and its manifestations are often dramatic in their intensity. It is readily accessible to air born or contact allergen, site for recurrent bacterial infection, frequently exposed to drug.

Classification of ocular hypersensitivity reaction (2):

Type 1: seasonal allergic conjunctivitis, atopic keratoconjunctivitis, giant papillary conjunctivitis, vernal keratoconjunctivitis.

Type 2: Ocular cicatrical, pemphigoid, ocular manifestations of pemphigus vulgaris & dermitis herpitiformis.

Type 3: Ocular involvement in collagen vascular disease, Steven Johnson syndrome & toxic epidermal necrolysis.

Type 4: phlyctenular keratoconjunctivitis, contact hypersensitivity, corneal transplant rejection and ocular involvement in graft versus host disease.

It is very important to diagnose the type of OHR to initiate appropriate treatment. Most of the data available is the prevalence of both ocular and nasal symptoms together, making it impossible to separate ocular allergy from allergic rhinitis. There are very few studies on type ocular hypersensitivity reaction (OHR) therefore we conducted the study with following aims and objectives:

To study age and sex distribution in OHR

To study types of OHR and incidence of individual type of OHR

Correlate the types of OHR with age, sex, bilateral or unilateral.

Material and methods

This is a one year prospective study, conducted in the department of ophthalmology tertiary care hospital at Mumbai after approval from ethical committee of the institute. 50 patients of ocular hypersensitivity reaction (OHR) were selected in the study after written consent from the patients from ophthalmic OPD and skin OPD.

Different tests were performed for the diagnosis of type of hypersensitivity like Snellens visual acuity charts were used to test visual acuity and slit lamp used to test anterior segment examination. Digital tonometry and schimer's test was performed for each patient. Fluorescent staining was also done to detect any corneal pathology. Other investigations like complete blood count, RA antigen detection, Mantoux test, serum electrolytes, liver function test and kidney function test for all patients were performed.

Results

50 patients of ocular hypersensitivity reaction (OHR) were studied. Overall male predominance seen, but in individual type showed male predominance in vernal keratoconjunctivitis (VKC) (80%) whereas female predominance in phlyctenular conjunctivitis (60%) and collagen vascular disease (63%) (Table1).

In OHR 30 to 40 years of age group was most commonly affected (Graph 1) whereas age distribution of individual type showed 100% of VKC and 60% of phlyctenular conjunctivitis were from age group <20 years (Table2).

There are various types of ocular hypersensitivity reaction (OHR), of which allergic conjunctivitis (13/50) was most commonly seen(Table 3). In our study overall 64% were having bilateral involvement and 36% having unilateral involvement (Table 3).

Discussion

50 patients of ocular hypersensitivity reaction (OHR) were studied of which 26 (52%) were males and 24 (48%) were females. In individual type wise sex prevalence showed male predominance in vernal keratoconjunctivitis (80%) but female predominance in phlyctenular conjunctivitis (60%) and collagen vascular disease (63%) (Table 1). Albert Jacobiec stated overall male predominance in OHR which is similar to our study (2). Suresha et al (3) and Ujwala et al (4) also showed male involvement in 82% and 87% of VKC patients respectively. Kelly et al (5) showed female predominance in collagen vascular disease.

In present study most common age group involved was 20 to 30 years (40%) (Graph1). Age distribution in individual types showed all cases of vernal catarrh (100%) and phlyctenular conjunctivitis (60%) were <20 years. In collagen vascular disease (84.28%) and SJS (64%) maximum cases were from 20 to 40 year age group and also we get single case of atopic keratoconjunctivitis which was 37 year old (Table 2). Albert jacobiec (2) also mentioned that allergic reactions are more common in young individuals and vernal keratoconjunctivitis particularly seen in 6 to 13 years of age. Leonardi et al (6) mentioned that VKC mostly seen in 4 to 12 years of age and Ujwala et al (4) had got mean age 12 years. Mario et al (7) also stated that VKC common

in young people which is almost similar to present study. Kelly et al mentioned that incidence of collagen vascular disease more common in middle age group (4). Herry Stein et al (8) showed phlyctenular conjunctivitis predominately seen in 4 to 8 years of age and Sorsby et al (9) also mentioned yonger people were more involved in PKC. Study by A. Leonardi et al (6) showed that AKC is most commonly seen in 30 to 50 years of age which is similar to present study.

In our study we discussed the various types of ocular hypersensitivity reaction (OHR), of which allergic conjunctivitis (13/50) was most common followed by vernal keratoconjunctivitis (5/50) (Table 3). Mario el al (7) got 15 to 20 % incidence of allergic conjunctivitis which is less than our study. Jacobiec et al (2) showed that incidence of type 1 reaction is most common, similar to present study. Peter et al (10) showed that seasonal allergic conjunctivitis is found in 15% of population where as collagen vascular disease (CVD) have incidence of 1% but ophthalmic manifestation are seen in 7 to 8% of CVD.

In our study 64% of patients were having bilateral involvement and 36% were having unilateral involvement of eye. On the study of eye involvement in individual type showed, diseases like allergic conjunctivitis (100%), vernal catarrh (100%), and systemic disease with ocular manifestations such as Pemphigus vulgaris, SJS/ TEN showed 100% bilateral involvement whereas unilateral involvement is more common with Phlyctenular keratoconjunctivitis and Collagen vascular disease (Table 3). Various studies showed similar findings such as Duke Elder et al (11) mentioned bilateral involvement in type 1 disease and systemic disease, possible explanation for bilateral involvement in systemic disease is that due to circular immune complexes in blood. Study by S. Bonin et al (12) also mentioned the bilateral involvement in VKC similar to our study. P. G. Watson et al (13) showed unilateral eye involvement in 50 of CVD.

Conclusion

The term ocular hypersensitivity reaction (OHR) includes various different types of clinical entities which are having the different incidence, age & sex variation and diagnostic features. These features will help in early diagnosis of individual type so that exact treatment can be initiated promptly.

Table 1: Sex distribution in OHR

Sr. no.	Types	Total cases	Male		Female	
			No.	%	No.	%
1.	Allergic conjunctivitis	13	5	36	8	64
2.	Vernal keratoconjunctivitis	5	4	80	1	20
3.	Atopic keratoconjunctivitis	1	0	00	1	100
4.	Giant papillary conjunctivitis	3	1	33	2	67
5.	Ocular cicatrical pemphigoid	0	0	00	0	0
6.	Pemphigus vulgaris	1	1	100	0	0
7.	Steven johnson syndrome & toxic epidermal necrolysis	6	3	50	3	50
8.	Collagen vascular disease	8	3	37	5	63
9.	Plyctenular keratoconjunctivitis	5	3	60	2	40
10.	Drug allergy	6	4	64	2	34
11.	Corneal transplant rejection	2	1	50	1	50
12.	Graft versus host disease	0	0	00	0	00
	Total	50	26		24	

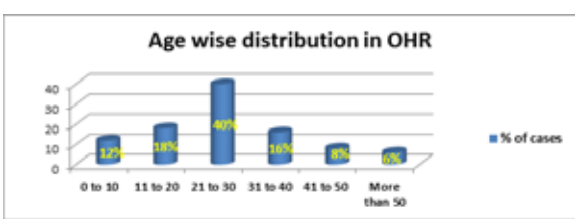
Table 2: Age distribution in individual types of OHR

Sr.no.	Types	Age in years			
		1-20 (No. of cases)	20-40 (No. of cases)	> 40 (No. of cases)	Total
1.	Allergic conjunctivitis	5	8	0	13
2.	Vernal keratoconjunctivitis	5	0	0	5
3.	Atopic keratoconjunctivitis	0	1	0	1
4.	Giant papillary conjunctivitis	0	2	1	3
5.	Ocular cicatrical pemphigoid	0	0	0	0
6.	Pemphigus vulgaris	0	1	0	1
7.	Steven Johnson syndrome & toxic epidermal necrolysis	2	4	0	6
8.	Collagen vascular disease	0	7	1	8
9.	Phlyctenular keratoconjunctivitis	3	1	1	5
10.	Drug allergy	0	4	2	6
11.	Corneal transplant rejection	0	0	2	2
12.	Graft versus host disease	0	0	0	0
	Total	15	28	7	50

Table 3: Types of ocular hypersensitivity reaction (OHR) by Gell and Coombs classification and their type of involvement.

Sr.no.	Types	No. of cases (%)	Unilateral Involvement No. (%)	Bilateral Involvement No. (%)
	Type 1 (22 cases)			
1.	Allergic conjunctivitis	13 (26)	0 (0)	13 (100)
2.	Vernal keratoconjunctivitis	5 (10)	1 (20)	4 (80)
3.	Atopic keratoconjunctivitis	1 (2)	1 (0)	0 (0)
4.	Giant papillary conjunctivitis	3 (6)	0 (0)	3 (100)
	Type 2 (1 case)			
5.	Ocular cicatrical pemphigoid	0 (0)	0 (0)	0 (0)
6.	Pemphigus vulgaris	1 (2)	0 (0)	1 (100)
	Type 3 (14 cases)			
7.	Steven Johnson syndrome & toxic pidermal necrolysis	6 (12)	0 (0)	6 (100)
8.	Collagen vascular disease	8 (16)	8 (100)	0 (0)
	Type 4 (13 cases)			
9.	Plyctenular keratoconjunctivitis	5 (10)	5 (100)	0 (0)
10.	Drug allergy	6 (12)	1 (16)	5 (84)
11.	Corneal treanplant rejection	2 (4)	2 (100)	0 (0)
12.	Graft versus host disease	0 (0)	0 (0)	0 (0)
	Total	50 (100)	18 (36)	36 (64)

Graph 1: Age distribution of patients with ocular hypersensitivity reaction (OHR)



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