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LETTER TO THE EDITOR

OPHTHALMOSCOPIC CHANGES IN COLOUR DEFECTIVE SCHOOL CHILDREN

Sir,

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Appreciation of colours is a function of cones and is possible only in photopic vision. Three independent systems of cones are present viz Red, Green and Blue, which contribute to most of the colours. When their responsesare equal depending on the intensity they create the impression of white, grey and black (1) The occurrence of congenital deficiency in the appreciation of colour values has long been recognised (2, 3), but general interest in colour vision defects was aroused by the observation of the chemist (4). Later on Thomas Young (5) put forward the trichromatic theory of colour vision, which was supported by other workers (6). Anomalies in colour vision are usually hereditary and expressed as congenital defects. Red-green colour blindness is a recessive sex linked character. It is more common in men than in women. Acquired defects in colour vision (though rare) occur due to ocular or CNS diseases (7). Fundal changes had been reported in cases with colour blindness due to acquired / pathology of the eye. No data are available in which fundal changes of congenital colour defective had been studied. Present study was conducted on 3101 school children (boys 2099 and girls 1002) between the age groups of 10-18 years studying in various schools of Amritsar and Moga. Colour vision of each student having normal acuity of vision was tested by using Ishihara charts. 68 students (66 boys and 2 girls) were found to be colour defective giving incidence of 3.14% and 0.2% respectively. Of these 66 were red-green blinds and two were blue blinds. All the students had bilateral defects. Those found to be colour defective but with normal acuity of vision were subjected to direct ophthalmoscopy for the examination of the fundus. A control group of age and sex matched students with normal colour and acuity of vision were also subjected to ophthalmoscopic examination.

It was observed that only 22 (32.3%) colour defective students showed various defects on fundus examination. On the other hand 7(10.3%) of control subjects had positive ophthalmoscopic findings. Details of fundal changes in colour defectives and control group are shown in Table-I

A chi square value of 9.85 at d.f. 1 and $P<0.01$ (8) showing statistically significant result was obtained on comparison of the fundal changes of colour defective students

TABLE I: Details of fundal changes on ophthalmoscopy in colour defectives and the control group.

Sr. No.	*Ophthalmoscopic findings*	*No. of students of the colour defectives*	*Percentage of colour defectives showing the changes*	*No. of students of the control group*	*Percentage of the control group showing the change*
1.	Dull Macula			3	44
	♦ In both eyes without changes	5			
	♦ In both eyes with mottled macula in left eye	1			
	♦ Dull macula in right eye only	1			
	♦ Dull macula in left eye only	2			
	Total	**9**	**13.2**	**3**	**4.4**
2.	Physiological cupping				
	♦ In both eyes without any associated changes	3			
	♦ In both eyes with hypopigmented macula	1			
	♦ In both eyes with mottled macula in both and cogenital looping of vessels in the right eye	1			
	♦ In right eye only	4			
	♦ Mild physiological cupping			4	5.9
	Total	**9**	**13.2**	**4**	**5.9**
3.	Pale optic disc				
	♦ Both eyes	1			
	♦ In right eye only	1			
	Total	**2**	**2.9**		
4.	Astigmatic oval disc	1	1.5		
5.	Slight crescent around the disc in right eye	1	1.5		
	Grand Total	**22**	**32.3**	**7**	**10.3**

with the fundal changes seen in the control subjects. Increase incidence of various fundal changes in the colour defective students may be a co-incidental finding or may be directly or indirectly related to the colour vision defects of the eye. Further, as genetic linkage had been reported between colour

blindness and some diseases (9. 10) therefore detailed genetic studies would be needed to give the exact relation of the findings on ophthalmoscopic in the colour defectives with their colour defects.

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