

A NOTE ON THE AGE OF ONSET OF HYPERTRICHOSIS PINNAE AURIS IN ORISSA, WEST BENGAL AND CEYLON

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The recent studies (Dronamraju, 1960, 1961a,b; Dronamraju and Haldane, 1962; Sarkar *et al.*, 1961) on the genetics of hypertrichosis of the human ear margin have made it clear that the character is much more variable than appeared at first. The number of long hairs, which grow on the helix, ranges from one or two on either ear to a thick bushy growth on both ears. Though the earliest age of onset recorded by the author (Dronamraju, 1960) was 17 years, the hairs do not become prominent in appearance until the age of 20 or over. No woman has been observed to show this trait. The frequencies of this character among the men in Ceylon, Andhra Pradesh and West Bengal were published previously (Dronamraju, 1961a).

Orissa and West Bengal are two eastern states of India in which the majority of the inhabitants speak the Oriya and Bengali languages respectively. An examination of 871 Oriya males in Orissa showed that the percentage of men with hypertrichosis of the helix is 5.4 in the 18—20 years age group and increases to 58.3 among those aged 45 years or more (Dronamraju, 1963). Similar data from West Bengal and Ceylon, and a detailed account of the Orissa data are presented in this note.

The Orissan subjects include students and staff of an Agricultural College and a state Training Centre in Bhubaneswar, workers of the Kalinga Tubes Ltd., Choudhwar, and thirty-two residents of the village Sri Ramchandrapur in the Puri district. The students and factory workers came from different districts of the state of Orissa. The 152 men examined in West Bengal were all Bengalis (mostly Hindus) and were workers at the Indian Statistical Institute in Calcutta.

The 413 men examined in Ceylon were all Sinhalese and included many Buddhists and a few Christians. They were outpatients of the General Hospital in Colombo; labourers, research and administrative staff of the Coconut Research Institute in Lunuwila; gardeners of the Peradeniya Botanical gardens; and technicians in the workshop of the Department of Agriculture at Peradeniya.

The age at the time of investigation was noted for all subjects. The youngest males examined in Orissa and Ceylon were 15 years old and in Calcutta 18 years old. The youngest affected was 18 in Orissa, 25 in Calcutta and 19 in Ceylon. It should be noted that in most parts of India and Ceylon, men with hairy ears are not ashamed of this character, and many take a pride in these hairs, growing them carefully, unlike many of those in the U.S.A. who consider this excess hair growth unfashionable and shave it off at frequent intervals (Dr. H. Pincus, personal communication). The former situation makes it possible to obtain accurate data in this kind of investigation.

In order to find out the frequencies of men with hairy pinnae in different age groups they are classified on the basis of their age into 3-year groups. Let us first examine the Orissa data (Table 1). All the fifty boys below the age of 18 years were without

hairy pinnae. In the 18—20 years group 5.4 per cent had hairs on the helix. This percentage increased with the age of the subjects and is 58.3 per cent among those

Table 1. *The classification of Oriya men based on their age and presence or absence of hairy pinnae*

Age group (in years)	Total no. of men examined	No. with hairy pinnae	Percentage
15-17	50	0	0
18-20	353	19	5.4
21-23	200	34	17.0
24-26	94	9	10.7
27-29	33	6	18.2
30-32	50	17	34.0
33-35	23	7	30.8
36-38	14	5	
39-41	21	6	
42-44	7	2	
45 and over	36	21	58.3
Total	871	126	14.5

Table 2. *West Bengal*

Age group (in years)	Total no. of men examined	No. with hairy pinnae	Percentage
15-17	0	0	0
18-20	10	0	
21-23	23	0	
24-26	21	3	
27-29	25	2	8.0
30-32	22	4	18.2
33-35	10	3	35.3
36-38	7	3	
39-41	16	5	27.3
42-44	6	1	
45 and over	12	3	25.0
Total	152	24	15.8

aged over 44 years. The increase in the incidence is significant over the age of 44 years ($\chi^2=7.30$).

None among the 33 Bengalis aged 23 years or less had hairy pinnae (Table 2). There is a significant increase in the incidence over the age of 32 years. The numbers are, however, not large enough for all the age groups. The safest comparison is, perhaps, between those aged 29 years or less and the older ones; 6.3 per cent of the former group and 26.02 per cent of the latter had hairy pinnae. This difference is highly significant ($\chi^2=11.07$).

Table 3. *Ceylon*

Age group (in years)	Total no. of men examined	No. with hairy pinnae	Percentage
15-17	1	0	0
18-20	13	1	7.7
21-23	42	4	9.5
24-26	53	11	20.8
27-29	52	13	25.0
30-32	53	18	33.9
33-35	31	15	48.3
36-38	23	13	56.5
39-41	31	11	35.5
42-44	22	12	54.5
45 and over	92	55	59.8
Total	413	153	37.04

The only case below the age of 18 years from Ceylon was a negative (Table 3). The percentage of positives increased with age and reached a maximum of 59.8 among those aged over 44 years. This observation is in close agreement with the percentage recorded in Orissa. The increase in the incidence is not quite significant over the age of 44 years ($\chi^2=3.6$).

The overall incidence is 14.5 per cent in Orissa, 15.8 per cent in West Bengal, and 37.04 per cent in Ceylon.

These data clearly show that the percentages of men with hairy pinnae considerably increased with age in Orissa, West Bengal and Ceylon. The increase is significant even after the age of 44 years in Orissa and Ceylon. This may be due to the phenotype appearing at the late age of 45 years or over in some cases. Alternately, it may also be possible that the action of the gene or genes responsible for Hypertrichosis of the pinnae is positively correlated with those determining longevity. If the former is true, it appears probable that several genes may be involved in controlling the expression

of the phenotype and that the gene or genes responsible in the case of the Dronamraju pedigree caused early onset in all sons of affected men.

SUMMARY

An examination of the ears of 871 Oriya males in Orissa, 152 Bengali males in Calcutta, and 413 Sinhalese males in Ceylon showed that the percentage of men with hypertrichosis of the helix is 14.5, 15.8, and 37.04 respectively. The incidence among those aged 20 years or less is 5.44 per cent in Orissa and 7.7 per cent in Ceylon. None among the 33 Bengalis aged 23 years or less had hairy pinnae. The percentage of men with hairy pinnae is 58.3 in Orissa and 59.8 in Ceylon among those aged 45 years or more, and the increase over the age of 44 years is significant in Orissa, and nearly so in Ceylon. In the Bengali data, the increase is significant over the age of 29 years. These observations suggest that several genes may be involved in controlling the expression of the phenotype.

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NOTE ADDED IN PROOF

Slatis and Apelbaum (1963) examined the ears of nearly 900 Israeli men for Hypertrichosis Pinnae Auris and found that their data "agree with the hypothesis that this trait is determined by a gene on the Y chromosome". The earliest age of onset observed by them was 20 years but penetrance was not complete until very late in life. They suggest that there may be an allele in Indians which causes an early onset of the trait.

REFERENCES

- DRONAMRAJU, K. R. (1960). Hypertrichosis of the pinna of the human ear, Y-linked pedigrees. *J. Genet.*, **57**, 230-243.
- DRONAMRAJU, K. R. (1961a). Frequencies of hairy pinnae among Indian and Sinhalese peoples. *Nature*, **190**, 653.
- DRONAMRAJU, K. R. (1961b). Y-linked inheritance and frequency of hypertrichosis pinnae auris. *Proc. Second Int. Conf. Hum. Genet.*, Rome 1961, Excerpta Medica, (E 17) Abstract.
- DRONAMRAJU, K. R. AND HALDANE, J. B. S. (1962). Inheritance of hairy pinnae. *Am. J. Hum. Genet.*, **14**, 102-103.
- DRONAMRAJU, K. R. (1963). The age of onset of Hypertrichosis Pinnae Auris among the Oriyan males. *Sci. & Cult.*, **29**, 162.
- SARKAR, S. S., BANERJEE, A. R., BHATTACHARJEE, P. AND STERN, C. (1961). A contribution to the Genetics of Hypertrichosis of the ear rims. *Am. J. Hum. Genet.*, **13**, 214-223.
- SLATIS, HERMAN M. AND APELBAUM, AZAY (1963). Hairy Pinna of the Ear in Israeli Populations. *Am. J. Hum. Genet.*, **15**, 74-85.