Acta Genet Med Gemellol 36:557-559 (1987)


# Incidence of Double Occipital Hair Whorls in Twins and Singletons

**Krishan Sharma**

*Department of Anthropology, Panjab Univeristy, Chandigarh, India*

**Abstract.** A sample of 122 twin pairs and 166 singletons from the urban Punjabi population of Chandigarh was studied. The observed frequency of double occipital hair whorls was higher in twins than in singletons ($P < 0.01$). The possible association between twinning and double occipital hair whorls is discussed.

**Key words: Hair whorls, Twinning**

In genetic research, and since Galton's times [5], twins are considered to be comparable to singletons. However, a number of peculiarities are associated with twinning and twins and nontwins have been found to differ in many traits. For example, the incidence of congenital malformations is much higher in twins than in singletons [4,7,14], and so seems to be the risk of epilepsy [13]. But there are few reports comparing morphological characters in twins and singletons.

The present report presents data on incidence of double occipital hair whorls in twins and singletons. In humans, the hair at the occipital region comes forth in a whorl. There is usually one such whorl but at times it is double, one lying on each side of the middle line. Anthropologists have been traditionally using this as a morphological variant to study population differences [1,2,6,8,16]. The genetic basis of occipital hair whorls has already been discussed in a previous report [12].

The study is based on a sample of 122 twin pairs (33 MZ and 89 DZ) and 166 singletons drawn from the urban Punjabi population of Chandigarh for a larger study on morphological variations in northwest Indian twins and their families [10,11]. Zygosity was determined on the basis of blood groups ($A_1A_2BO$, Rh, MN, Kell and Duffy), ABH secre-

tor factor and PTC tasting ability. The subjects were observed for their occipital area. Determination of the number of hair whorls was easy in subjects with short hair, while in subjects with long hair, especially girls, an aseptic comb was used. Cases with very long and curly or no hair were not included in the study.

Double occipital hair whorls were found in 25 of the 244 twins but only in 4 of the 166 singletons, all others showing single whorls. The difference is significant ($P < 0.01$). Intrapair concordance was only shown by 1/6 MZ and (partly) by 1/17 DZ pairs. Such a low concordance rate in MZ twins indicates that the trait is subject to presumably prenatal environmental influences.

The higher frequency in twins than singletons points to the possibility of an association between twinning and double occipital hair whorls. Twinning has in fact been found to be associated to a number of conditions, as well as physical traits, eg, head shape [17]. In a previous report [9] we too have found some indication of head morphology being influenced by the type of twinning. But Susanne et al [15] have found no such association for any of the head and facial traits in a sample of Belgian twins. On the other hand, Boklage [3] has shown, by using multivariate statistical methods, that MZ twins, DZ twins and singletons differ significantly in protocols of craniofacial development.

## REFERENCES

1. Bhalla V, Kaul SS (1968): Occipital hair whorl as a racial criterion; a critical assessment. Am J Phys Antrop 28:99-104.
2. Biswas PC (1950): Studies of the whorls on head hair in Tehri Rajputs. Eastern Anthropologist 4:104.
3. Boklage CE (1984): Differences in protocols of craniofacial development related to twinship and zygosity. J Craniofac Genet Dev Biol 4:151-169.
4. Edwards JH (1968): The value of twins in genetic studies. Proc Roy Soc Med 61:227-229.
5. Galton F (1875): The history of twins as a criterion of the relative powers of nature and nurture. J Roy Anthrop Inst 5:391-406.
6. Garg SK (1979): Occipital hair whorl among Bhoksas of Western Doon. Bull Anthropol Surv India 28:1-6.
7. Hay S, Wehrung DA (1974): Congenital malformations in twins. Am J Hum Genet 22:662-678.
8. Kumar N (1968): A genetic survey among the Rana Tharu of Nainital district in Uttar Pradesh. J Ind Anthrop Soc 3:39-55.
9. Sharma JC, Sharma K (1984): Estimates of genetic variance for some selected morphometric characters: a twin study. Acta Genet Med Gemellol 33:509-514.
10. Sharma K, Byard PJ, Russell JM, Rao DC (1984): A family study of anthropometric traits in a Punjabi community: I. Introduction and familial correlations. Am J Phys Anthrop 63:389-395.
11. Sharma K, Corruccini RS, Henderson AM (1985): Genetic variance in dental dimensions of Punjabi twins. J Dent Res 64:1389-1391.
12. Sharma K (1985): Inheritance of occipital hair whorls in man: a twin and family study. Ind J Phys Anthrop Hum Genet 11:17-23.
13. Sharma K (1986): Higher risk of epilepsy in twins. Ind J Pediatr 53:415-419.
14. Stevenson AC, Johnston HA, Golding DR, Stewart MJP (1966): World Health Organization comparative study of congenital malformations. Bull WHO 34, Suppl.
15. Susanne C, Defrise-Gussenhoven E, Wanscele PV, Tassin A (1983): Genetic and environmental factors in head and face measurements of Belgian twins. Acta Genet Med Gemellol 32:229-238.
16. Tripathy KC (1966): Taste, mid-digital hair and occipital hair whorls of Khonds, Orissa. Adibasi 8:29-36.

17. Torgersen J (1951): Hereditary and environmental factors in twinning. Am J Phys Anthrop 9: 441-454.

**Correspondence:** Dr. K. Sharma, Department of Anthropology, Panjab University, Chandigarh 160014, India.