

SINGLE UMBILICAL ARTERY

by

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Although the occurrence of a single umbilical artery was described in 1621, the publication by Benirschke and Brown in 1955 revived the interest in this problem. Since then many retrospective and prospective studies have been published on this subject.

Absence of one umbilical artery may be due to aplasia or to regression of the anlage. It is not considered to be a teratogenic agent per se but it is sometimes associated with congenital anomalies and may sometimes occur as an isolated anomaly. It may have haemodynamic effects that are deleterious to the foetus.

This study was conducted with a view to find the incidence of single umbilical arteries in our hospital deliveries.

Material

The umbilical cords and placentae of 1430 consecutive deliveries, conducted at Upper India Sugar Exchange Maternity Hospital, and Dufferin Hospital, Kanpur, were examined for the presence of single umbilical artery. When a single umbilical artery was seen on inspection, its presence was confirmed by microscopic examination. The presence of

any congenital anomaly in the newborn was noted.

Results

Single umbilical artery was found in 14 instances—an incidence of 0.94 per cent. Congenital malformations were present in 7 (50 per cent) of cases. Of these 4 were stillborn, 2 died in the neonatal period and one surviving. These findings are shown in the accompanying table.

Of these 14 cases, 4 were muslims and 10 hindus. The incidence in these two groups is not different as in Kanpur the ratio of muslims and hindus in the population is also about the same.

Only one of the mothers was a primigravida, the remaining 13 being multigravidae. Thus the mothers of the infants with single umbilical artery had increased parity.

Discussion

The incidence of single umbilical artery was found to be 0.94 per cent. An incidence of 1 per cent is reported by Benirschke and Brown (1955), Faierman (1960) and Cairns and Mckee (1964). Froehlich and Fujikara (1966), reported an incidence of 0.76 per cent based on examination of 25,539 placentae in 12 different institutions in U.S.A. A rather low incidence of 0.2 per cent has been reported by Lenoski and Medovy

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Received for publication on 26-7-67.

TABLE 1
Congenital malformations

Malformations	Cases		Result
	No.	Percent- age	
Thoracophagus	1	7.14	Stillbirth
Anencephaly	1	7.14	Stillbirth
Hydrocephalus, spina bifida and cleft palate ..	1	7.14	Stillbirth
Exomphalous	2	14.30	Stillbirth (1) Neonatal death (1)
Ectopia vesicae and talipes	1	7.14	Neonatal death
Cavernous haemanageoma	1	7.14	Surviving
TOTAL	7	50.00	

(1962) in a prospective study of 2,500 consecutive deliveries. In a retrospective study, they found the incidence to be 5.2 per cent examining the microscopic section of the umbilical cord in 229 perinatal autopsy cases. An incidence of 2.9 per cent has been reported in retrospective study by Seki and Strauss (1964). The incidence in these retrospective studies is high because these were selected groups i.e. the patients had died or placenta were examined because of suspected abnormalities.

Froehlich and Fujokura (1966) reported that the incidence of single umbilical artery was 1.22 per cent in white persons and only 0.44 per cent in the Negro. Conversely, the incidence of associated congenital malformations was higher in the Negro, (42.1%) than in the white (23.0%). The racial factor has not been mentioned in any other study. In the present series no such difference was seen among the hindus and muslims. Lenoski and Medovy (1962), and Seki and Strauss (1964),

noted a relatively high incidence in monozygous twins. Cairns and Mckee (1964), did not find any correlation between single umbilical artery and twin birth, toxemia or previous neonatal death. Benirschke (1962), states that although single umbilical artery is more frequent in twin births, there does not appear to be an increased incidence of congenital anomalies in these cases.

Little (1961), found that mothers of infants with single umbilical artery had a slightly increased parity as has also been noted in the present series.

The incidence of congenital malformations was 50 per cent (7 cases) in the present series, of these 4 were stillborn and two died in the neonatal period. The incidence of malformations reported by Cairns and Mckee (1964) was 10 per cent, by Lenoski and Medovy (1962) was 20 per cent, and by Seki and Strauss (1964) was 55 per cent (mostly severe multiple and often lethal). In the collaborative study Froehlich and Fujikura (1966) found an over all

incidence of 28.6 per cent. The incidence of skeletal and gastro-intestinal malformations was the highest.

The association of single umbilical artery with Trisomy-18 syndrome (Uchida and Bowman, 1962, German *et al*, 1962) and with Turner's gonadal dysgenesis (Richert and Benirschke, 1958) has been reported.

A clear picture about the incidence of single umbilical artery and associated malformation in the Indian population would emerge if placentas are routinely examined in various centres for the presence of single umbilical artery and associated congenital malformations in the new born are looked for, and information should be pooled and evaluated.

Summary

On examination of 1430 consecutive placentae single umbilical artery was found in 14 (0.94%) instances. Seven (50%) patients had severe malformations of which six died. The literature on the subject is reviewed.

References

1. Benirschke, K. and Brown, W. H.: *Obst. & Gynec.* 6: 399, 1955.
2. Benirschke, K.: *Am. J. Obst. & Gynec.* 84: 1595, 1962.
3. Cairns, J. D. and Mckee, J.: *Canad. M.A.J.* 91: 1071, 1964.
4. Faierman, E.: *Arch. Dis. Childh.* 35: 285, 1960.
5. Froehlich, L. A. and Fujikura, T.: *Am. J. Obst. & Gynec.* 94: 274, 1966.
6. German, J. L., et al: *J. Pediat.* 60: 503, 1962.
7. Lenoski, E. F. and Medovy, H.: *Canad. M.A.J.* 87: 1229, 1962.
8. Little, W. A.: *Obst. & Gynec.* 17: 695, 1961.
9. Richert, R. and Benirschke, K.: *New England J. Med.* 258: 974, 1958.
10. Seki, M. and Strauss, L.: *Arch. Path.* 78: 449, 1964.
11. Uchida, I. A., Bowman, J. M. and Wong, H. C.: *New England J. Med.* 266: 1198, 1962.

Fig. on Art Paper X