13. OTHER LOCAL AND GENERAL SKELETAL MALFORMATIONS (K1-K5)

Chondrodystrophy (K2), osteogenesis imperfecta (K3) and Pierre Robin syndrome (K4) are more or less definite syndromes and most clinicians would probably agree on the diagnosis of specific cases. " Other local skeletal " (K1) is a heterogeneous group including any localized skeletal anomalies except those affecting the limbs, which were classified in the J group. " Other general skeletal " (K5) includes some recognized syndromes (e.g., diaphyseal acholasia, cranio-cleidal dysostosis) and also cases where from the description there were multiple skeletal anomalies but not in any known recurring pattern. The numbers of infants affected in these five categories are given in Table 13.1.

OTHER LOCAL SKELETAL MALFORMATIONS (K1)

The 21 diverse malformations recorded here may be studied in the lists in the Basic Tabulations by Centres booklet. The numbers are small and no comment appears necessary except to point out, as already mentioned in connexion with some J group anomalies, that in many of the cases it is likely that radiographic examination would have revealed more generalized skeletal anomalies.

CHONDRODYSTROPHY (K2)

There can be little doubt that the cases recorded as chondrodystrophy or achondroplasia are of two types. Some are probably one of the variants of achondroplasia determined by a single dominant gene. In none of the cases is there any indication that a parent was affected, but a considerable proportion of all such monomeric cases would be expected to be the first recipients of a mutation which arose in a parent. The expected sex proportion (M/M+F) in these cases is 0.5. The remaining cases are probably examples of chondrodystrophia foetalis, which is sometimes called a " phenocopy ". In this condition a high proportion are stillborn or die shortly after birth, many have other malformations, some have a general foetal hydrops, a high proportion are associated with maternal hydramnios and there is a preponderance of females. These distinctions are discussed by Stevenson (1957).

As will be seen from Table 13.1, there were reported in the study 31 cases (10 males and 21 females), classed in the K2 group. In addition there were 5 cases (3 males and 2 females) who, because they had other specified malformations, were categorized as N. The over-all sex proportion was 13/36 (0.36); 6 of the 13 males and 9 of the 23 females were stillborn or died in hospital.

The over-all frequency of cases in K2 (i.e., of both types) identified at birth, which approaches 1/10 000, is of the same order of magnitude as that reported from other centres (Stevenson, 1957). On several cards the information that the mother had hydramnios was volunteered. This pattern of high mortality, association with hydramnios and excess of females strongly suggests that a considerable proportion of the cases reported were of the second type, i.e., chondrodystrophia foetalis. In our experience, milder cases of true monomeric achondroplasia are by no means always recognized at birth and no doubt some cases were missed in the present study. In contrast, infants with chondrodystrophia foetalis are probably all recognized at birth.

A pair of MM twins who were both affected with " achondroplasia " (Melbourne 2) were born to a mother of 39 years of age. Both left hospital alive, neither parent was affected, and the pregnancy was not complicated by hydramnios. These facts suggest strongly that the infants had monomeric achondroplasia. The mean paternal age of mutant achondroplastics is increased by about five years over the mean in a population and in this case it may be presumed, as the mother was 39 years of age, that the father was well above the mean paternal age in the centre.

OSTEOGENESIS IMPERFECTA (K3)

This condition was included as a separate subgroup because certain data from South-East Asia had indicated to us that it might be more common in that part of the world. However, it will be seen from Table 13.1 there were only 11 cases in all and nothing to support such a suggestion.

Nothing can be deduced from such scanty data except that the severe degrees of the condition as

recognized at birth are very uncommon and probably do not have a frequency greater than about 5/100 000 livebirths and stillbirths.

PIERRE ROBIN SYNDROME (K4)

This condition was included as a separate subgroup mainly because it so happened that some of the first cards received from Melbourne and Johannesburg included several cases so designated. The condition described by Pierre Robin in 1934 was thought to be very rare, and indeed very severe cases with acute dysphagia and dyspnoea associated with the micrognathia, glossoptosis and sometimes cleft palate are not common. However, it is now recognized that milder degrees occur and far outnumber the severe cases. It is by no means certain which of a range of cases should be so termed. An attempt at demonstrating the relationships of these cases and others affecting the ears and facial structure has been made by McKenzie & Craig (1955), who introduced the term " first branchial arch syndrome ". As indicated in section 9, most series of children with posterior cleft palate (G3) seen by surgeons include cases with the characteristic micrognathia and glossoptosis. Some of these cases are probably determined by a single recessive gene and its minimal manifestation may only be micrognathia. Syndactyly, polydactyly and other malformations are seen in some cases, as exemplified in the present series where megalocolon, syndactyly, absent fingers, talipes are reported. There are other cases in the N group where the description is compatible with the diagnosis but they are not included in the data in Table 13.1.

OTHER GENERAL SKELETAL MALFORMATIONS (K5)

This group includes cases of arthrogryphosis multiplex, diaphyseal acholasia, cranio-cleidal and cranio-facial dysostoses and scattered anomalies of the skeleton which do not fit elsewhere and vague descriptions such as " multiple skeletal malformations ". No doubt some of them have malformations of other tissues or organs which, if discovered, would have determined placement in the N group.

TABLE 13.1

OTHER LOCAL AND GENERAL SKELETAL MALFORMATIONS (K1-K5) IN SINGLE BIRTHS

CENTRE		Other local skeletal (K1)			Chondro-dystrophy (K2)			Osteogenesis imperfecta (K3)			Pierre Robin syndrome (K4)			Other general skeletal (K5)		
		Number of cases			Number of cases			Number of cases			Number of cases			Number of cases		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
I 1	MELBOURNE	1	-	1	-	-	-	-	-	-	1	1	2	-	-	-
I 2	MELBOURNE	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
II	SAO PAULO	-	-	-	1	-	1	2	1	3	-	-	-	-	-	-
III	SANTIAGO	-	-	-	1	-	1	-	-	-	-	-	-	4	1	5
IV 1	BOGOTA	-	-	-	-	3	3	-	-	-	-	1	1	1	1	2
IV 2	MEDELLIN	1	-	1	-	-	-	-	-	-	-	1	1	1	1	2
V	CZECHOSLOVAKIA	4	2	6	3	1	4	-	-	-	3	-	3	3	1	4
VI	ALEXANDRIA	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
VII	HONG KONG	-	-	-	2	1	3	1	-	1	-	-	-	1	-	1
VIII 1	BOMBAY	-	-	-	-	4	4	1	1	2	-	-	-	-	-	-
VIII 2	CALCUTTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX 1	KUALA LUMPUR	1	-	1	-	2	2	-	-	-	-	-	-	-	-	-
IX 2	SINGAPORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X 1	MEXICO CITY	2	1	3	1	-	1	1	1	2	2	1	3	1	2	3
X 2	MEXICO CITY	-	-	-	-	1	1	-	-	-	-	-	-	-	1	1
XI	BELFAST	1	2	3	-	1	1	-	-	-	-	-	-	3	4	7
XII	PANAMA CITY	1	-	1	-	-	-	-	-	-	-	-	-	2	2	4
XIII	MANILA	-	-	-	-	2	2	1	-	1	-	2	2	-	-	-
XIV 1	CAPE TOWN	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
XIV 2	JOHANNESBURG	-	-	-	-	1	1	-	-	-	2	4	6	-	2	2
XIV 3	PRETORIA	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
XV	MADRID	1	-	1	-	2	2	-	-	-	-	-	-	-	-	-
XVI 1	LJUBLJANA	3	1	4	-	1	1	2	-	2	1	-	1	1	1	2
XVI 2	ZAGREB	-	-	-	1	1	2	-	-	-	-	-	-	1	1	2
	TOTAL	15	6	21	10	21	31	8	3	11	9	10	19	18	20	38