Congenital Anomalies in Bahrain

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ABSTRACT

This study was carried out in order to find the incidence of congenital anomalies in Bahrain, we studied the statistics of the Ministry of Health for 8 years from 1978 to 1985. We found that the incidence rate of congenital anomalies in Bahrain is 1.3%. We studied each anomaly separately and compared it with the incidence in other countries whenever possible, together with the mode of these disorders as known from literature [1,2,3]. We found that anomalies of the musculoskeletal system have the highest rate (2.8 per thousand), following that, the genitourinary system (2.5 per thousand) and chromosomal disorders (0.9 per thousand). We also noticed that the anomalies are of increasing frequency.

Due to the decline in fatal infectious diseases, congenital abnormalities will, in the near future, be one of the major causes of infant mortality, as is the case in developed countries [4]. We studied the congenital anomalies during the last eight years to find the incidence of these diseases in Bahrain. We did not attempt to differentiate between the major and the minor anomalies, i.e. major anomalies, those malformations having a detrimental effect on either the physical functions or social acceptability of the individual, in contrast to minor malformations which have neither medical or cosmetic consequences for the patient [4, 5].

METHODS

Deliveries in the M.O.H. hospitals form more than 80% of the deliveries on the island. These statistics of the M.O.H. for the past eight years were classified and analysed to find the incidence of each anomaly separately. The problem of classification of congenital malformations presents certain difficulties, as other investigators in this field have found. The following classification has been adopted which maximises the information available [6].

Every malformation was classified according to the system as follows :

1. Central nervous system.
2. Cardiovascular system.
3. Musculoskeletal system.
4. Genitourinary system.
5. Gastrointestinal system.
6. Respiratory system.
7. Eye.
8. Ear.
9. Skin.
10. Miscellaneous.

This covers all the abnormalities which were diagnosed in the delivery suites immediately after birth, together with cases which were diagnosed by a paediatrician during the first year of life.

The statistics [6] may not represent the actual number of cases, due to under diagnosis and under reporting of some types of malformations due to the following :

1. Lethality of these disorders, causing death before birth or before diagnosis is made.

2. Impossibility of diagnosis of certain disorders which manifest themselves with the functional development of the infant, e.g. mental retardation, eye and ear abnormalities.

3. Difficulty of diagnosing internal organ abnormalities as compared with external organs.

RESULTS

Table 1. Shows the number of deliveries and the incidence of congenital anomalies each year.

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Incidence of Congenital Anomalies

Years	*No. of Birth*	*No. of Abnormal Cases*	*Incidence*
1978	9398	68	7.24
1979	9985	120	12
1980	10097	86	8.5
1981	11248	159	14.13
1982	11248	148	13.16
1983	11633	161	13.8
1984	12254	189	15.4
1985	12394	230	18.5

TABLE II

No. of Anomalies per Year

TYPE	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
NTD	17	20	22	11	14	17	14	15
CHD	4	14	5	22	25	19	31	31
RESP	0	0	0	0	3	4	2	3
CLEFT	4	6	4	6	6	6	9	10
GASTRO	8	8	6	11	11	12	12	25
GENETO	10	25	9	40	34	28	29	48
UNDESEDED	3	10	4	14	10	8	9	19
HYPOSPADIUS	3	8	4	22	14	12	10	14
CHROM	4	11	8	11	10	9	14	14
MUSCLESK	17	22	18	38	28	35	46	50
TEV	7	8	6	22	0	14	15	13

TABLE III

INCIDENCE OF EACH ANOM ALY PER YEAR

TYPE	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*OVER ALL INCIDENCE*
NTD	1.808	2.003	2.178	1.014	1.244	1.461	1.142	1.210	1.507
CHD	0.425	1.402	0.495	2.029	2.222	1.633	2.529	2.501	1.654
RESP	0.000	0.000	0.000	0.000	0.266	0.343	0.163	0.242	0.126
CLEFT	0.425	0.600	0.396	0.553	0.533	0.515	0.734	0.806	0.570
GASTRO	0.851	0.801	0.594	1.014	0.977	1.031	0.979	2.017	1.033
GENETO	1.064	2.503	0.891	3.690	3.022	2.406	2.366	3.872	2.476
UNDESEDED	0.319	1.001	0.396	1.291	0.889	0.687	0.734	1.532	0.856
HYPOSPADIUS	0.319	0.801	0.396	2.029	1.244	1.031	0.816	1.129	0.970
CHROM	0.425	1.101	0.792	1.014	0.889	0.773	1.142	1.129	0.908
MUSCLESK	1.808	2.203	1.782	3.506	2.489	3.008	3.753	4.034	2.822
TEV	0.744	0.801	0.594	2.029	0.000	1.203	1.224	1.048	0.955

Table 2. Shows the actual numbers of these diseases every year.

Table 3. Shows the incidence of these diseases every year together with the overall incidence.

DISCUSSION

We noted the following :

1. CENTRAL NERVOUS SYSTEM

The incidence of neural tube defects (N.T.D.) which include; anencephaly, spina bifida and encephalocele, was found to be 1.5 per thousand which is considered to be within the low group. The incidence of N.T.D. in the United Kingdom, in certain parts of Wales, Ireland and Scotland is as high as 4 – 8 per thousand [7] . Most of the N.T.D. are of multifactorial inheritance.

2. CARDIOVASCULAR SYSTEM

Table 3. shows the overall incidence to be 1.6 per thousand in Bahrain. In the United Kingdom the incidence is 8.14 per thousand. The cause of the low incidence here is due to under diagnosis of these disorders and not due to the rare occurence. More of these malformations are diagnosed later in the development of the infant. The malformation of great vessels are under reported because most of them can only be diagnosed at autopsy. The majority of cardiovascular system anomalies have a multifactorial mode of inheritance [4] .

3. MUSCULOSKELETAL SYSTEM

The anomalies involving this system are the most common of all anomalies. The average incidence was found to be 2.8 per thousand. It is of increasing frequency as in 1985 the incidence was 4.1 per thousand compared to that of 1978 which was 1.8 per thousand. We found that the most common category of these is the talipes equinovarus (T.E.V.) which had the incidence of 0.96 per thousand. The incidence of T.E.V. in the literature is 0.5 – 1.0 per thousand.

4. GENITOURINARY SYSTEM

The incidence was found to be 2.5 per thousand which comes second in frequency only to musculoskeletal disorders. The most frequent types that were found were undescended testes, 0.86 per thousand and hypospadias, 0.97 per thousand. The reasons for this may be the easy diagnosis of these disorders in comparison with the diagnosis of kidney abnormalities. It was noticed that these disorders are increasing in frequency, in 1985 the incidence was 3.9 per thousand.

5. GASTROINTESTINAL SYSTEM

The average incidence of anomalies involving this system is 1.1 per thousand. In 1985 the incidence was 2.17 per thousand. The incidence of cleft palate and lip was found to be 0.6 per thousand. In Europe it is 1.22 per thousand [8] .

6. RESPIRATORY SYSTEM

We found that the incidence of the anomaly involving this sytem is 0.13 per thousand. The same was noticed in other studies, 0.02 per thousand [6] . Due to the lethality and difficulty of diagnosis of this anomaly, this is usually an underestimation.

Chromosomal disorders had the frequency of 0.91 per thousand. The most common category was Downs syndrome. In 1984 the incidence was 1.14 per thousand, the international incidence of this disorder is 1.4 per thousand [9] .

We found from our study that the incidence of congenital malformations in Bahrain falls within the world range, even for individual anomalies. We noticed that most of them are of increasing frequency. The majority have a multifactorial origin, caused by the joint action of a genetic liability (polygenic inheritance) and environmental factors. The recurrence risk depends on the number of affected individuals in the family, the severity of the disorder and the sex of the index case. For an isolated case the recurrence risk varies between 1% and 7% depending on the type of malformation. The malformation that occurs in more than one member in the same family can have at least four causes [8] : teratogens, an inheritable chromosome abnormality, multifactorial inheritance and Mendelian inheritance. The first of these can be established by carefully taken history of the pregnancy, and the second by chromosomal analysis. However, to ascertain whether two affected siblings or an affected parent and affected child reflect multifactorial or Mendelian inheritance we need to collect data from a large number of the members of a family [10] .

The above frequencies are an underestimation since not all congenital malformations could be detected at birth or shortly thereafter. Some may not be diagnosed in the first year. McIntosh et al. found that they diagnosed 43% of malformations at birth and 82% during the first 6 months [10].

CONCLUSION

From our study we found that the incidence of congenital malformations in Bahrain lies within the world range of 0.57% – 4.93% [4]. That they are of increasing frequency, and that anomalies of the musculoskeletal system had the highest rate. Many of these anomalies create major problems for the family, society and the health services. That is why we recommend the following :

To register properly and monitor all congenital malformations in order to initiate treatment as soon as possible. To provide the parents with genetic counselling before another pregnancy is started. Genetic counselling is essential in these cases so that the parents will know the risk of having another affected baby, the ways of avoidance, and, even for the low risk group, alleviation of anxiety about further pregnancy [5,11,12].

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