Contemporary Obstetrics and Gynaecology

Edited by

Geoffrey Chamberlain

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Preface

Contemporary Obstetrics and Gynaecology continues the pattern of the previous book in this series. We have invited investigators, who have recently performed research work in aspects of the subject that we consider important, to contribute chapters on their fields. Thus, the growing edge of obstetrics and gynaecology is brought to readers who may not have heard these scientists speak at meetings in the last year when they presented their material.

The choice of subjects is idiosyncratic; they are all from material that the editor has heard in the last year. The spread represents the breadth of research evolving in our subject in Western Europe. More young men and women are finding interest in the study of reproductive medicine, which embraces clinical obstetrics and gynaecology, and more research is being funded in this zone for it interests both the public and some of the charities. It is sad, however, that the Scientific Research Councils of the United Kingdom find it hard to assess clinical research and so fund more bench trained work than that applicable to patients. Despite this, research goes on and *Contemporary Obstetrics and Gynaecology* provides an account of some part of the subject.

The obstetrical subjects include epidemiology, physiology, biophysics, embryology, pharmacology and clinical obstetrics. In the gynaecological section are endocrinology, microbiology, epidemiology, oncology, urodynamics and clinical gynaecology. These are views which are intended for the working obstetrician and gynaecologist, the younger men and women in training and for all those seeking to pass the MRCOG or similar examinations in other parts of the world.

All these accounts will interest obstetrician gynaecologists of all seniorities.

Geoffrey Chamberlain

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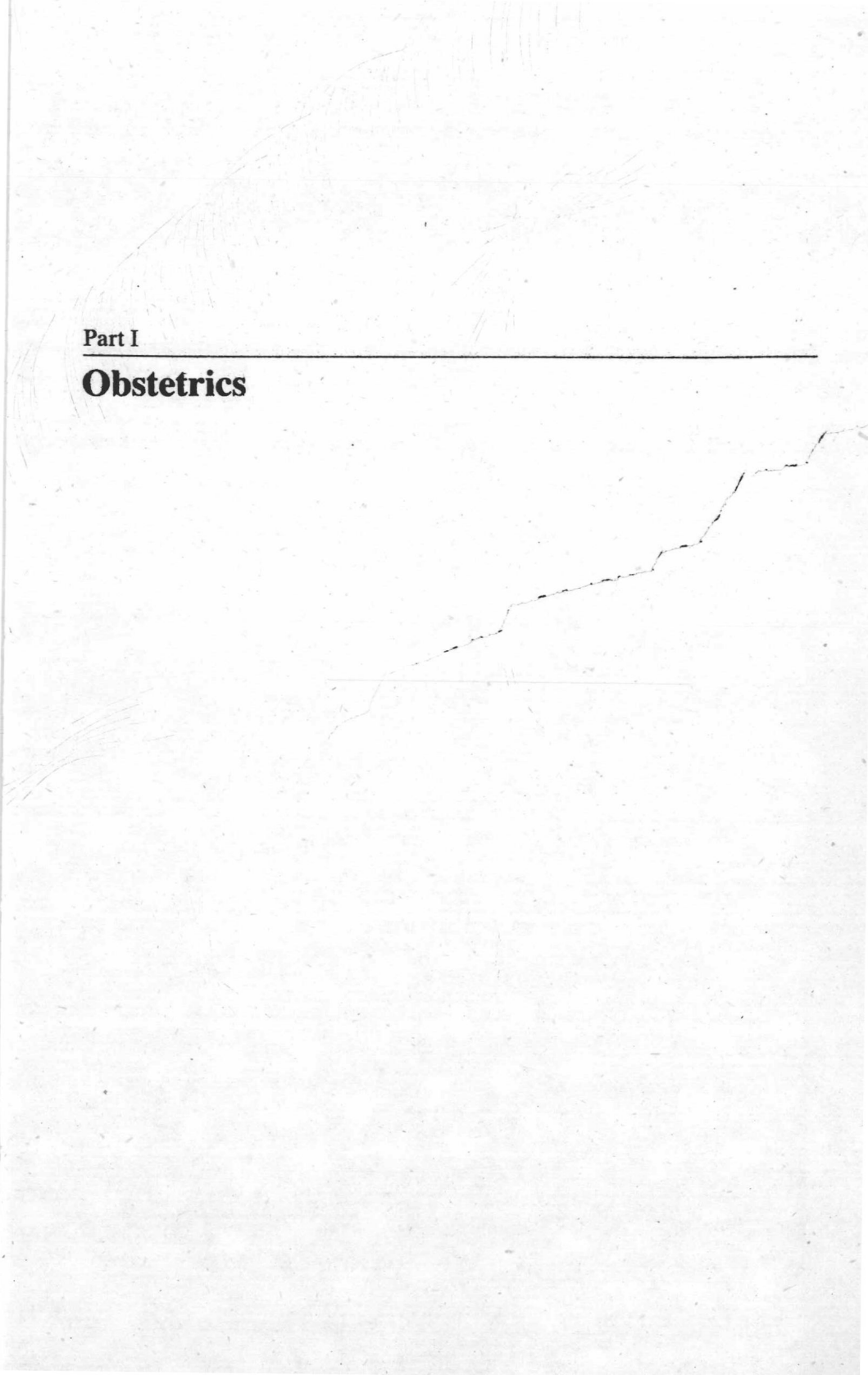

Part I

Obstetrics

1

Perinatal mortality and malformations among the Asian population in the UK

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Introduction

There is little doubt that different disease patterns occur in different ethnic groups but why this should be is uncertain. To analyse the situation in detail, as many factors as possible should be matched between the ethnic groups being compared; for many reasons this is almost impossible. The difficulties associated with the study of ethnic differences in any disease or condition in the UK involve different standards of living (social class) and difficulties with communication. There are, in addition, possible differences between first and second generation immigrants and, particularly in people from the Indian subcontinent, the very localized areas of settlement by subgroups. For example, these features, and marriage within close communities, may account for differences reported between Pakistanis in Bradford and Pakistanis in Birmingham (Robinson, 1980; Jones, 1982).

The pattern of migration has varied considerably over the years (*Figures 1.1* and *1.2*). Immigration from the West Indies occurred in the 1950s and early 1960s and these people settled mainly in London and the Midlands with localized communities in other industrial cities. Immigration from the Indian subcontinent, and in particular India and Pakistan, occurred in the late 1960s and 1970s. Those who came directly from the subcontinent settled in London, the East and West Midlands and West Yorkshire. However, during this period a substantial Gujarati Indian population emigrated to this country as a result of the political situation in East Africa, especially Uganda. Those of higher socioeconomic status settled in North-West London, while their lower socioeconomic compatriots settled in Leicester. More recently, a number of immigrants from Bangladesh have settled mainly in East London. The Pakistani population in Bradford originated in the north-west rural area (Mirpuri). As a result of this pattern of immigration, the majority of first generation women from the Indian subcontinent are of reproductive age; more West Indian mothers are second generation; and the first generation immigrants will tend to be older. Even within groups from the Indian subcontinent there are differences in the proportion of first and second generation mothers; only about 1 per cent of the Pakistani mothers in Bradford are second

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Figure 1.1 Main emigration areas in the Indian subcontinent

generation while this figure rises to about 10 per cent for the Indian population in the West Midlands.

Lifestyle expectancy is a factor that varies between the different ethnic groups and is related to whether an individual is first or second generation. Members of the Asian community who came directly from the Indian subcontinent often support relatives financially at home and would see themselves ultimately as returning home in many cases. Women of reproductive age often return to India or Pakistan to look after an elderly relative for periods of up to several years, and children may be sent home to gain the cultural education that the parents may wish and to prevent the child from becoming too Westernized.

Ethnic differences in obstetrics

Asian mothers can be grouped in terms of country of birth, religion and whether an individual is a first or second generation immigrant. Thus, the differences between a second generation East African Gujarati Hindu and a first generation Syleti Bengali (Moslem) represent as great an ethnic difference as that between a European and a Punjabi Sikh. The diverse Asian community cannot be regarded as

Figure 1.2 Major areas of settlement in the UK from the Indian subcontinent

an epidemiological unit, since marriage within groups, religious and cultural differences and social class factors interact.

Some obstetric factors which operate in certain ethnic groups are disadvantageous. Those such as social status, high parity and maternal age act to increase the perinatal mortality rate (PMR), others, e.g. the lack of smoking and illegitimacy, should act to reduce it.

There are then, many factors operating simultaneously in different ethnic groups which can all affect perinatal mortality, morbidity and birth weight. They make comparisons between the different groups difficult to interpret. Nevertheless, obstetric problems of ethnic minority groups should be documented, not only in an attempt to identify correctable environmental factors, but also to make a statement of fact without necessarily providing explanations and present a baseline for comparison of future generations.

Perinatal mortality rate

In Great Britain in 1980 the perinatal mortality rate (PMR) varied from 10.7/1000 in the South-West Thames region to 15.3/1000 in the North Western region (OPCS Monitor, 1981a and b). In the West Midlands it was 15.1/1000 in 1980 (OPCS Monitor, 1981a and b). National analysis of routinely collected statistics has produced perinatal mortality rates related to the ethnic group of the mother by using the place of birth information (Adelstein, McDonald Davies and Weatherall, 1980). Thus, in 1979, when the PMR in England and Wales was 14.6/1000, the rate in mothers who were born in India and Bangladesh was 20.2/1000, and in those from Pakistan it was 21.4/1000 (OPCS, 1982). Although useful, the routinely collected statistics, by using the place of birth of the mother, are unable to give the true ethnic picture. National statistics, for example, group mothers from India and Bangladesh together and take no account of second generation mothers who are not included in the relevant ethnic group.

Since perinatal death is such a rare event, even in groups with a comparatively high rate, where differences do occur between ethnic groups the numbers are small and results are therefore not often published. In Bradford, where the Asian population is predominantly Pakistani originating in the northern rural part of Pakistan, the PMR in the Asian population was found to be between one-and-a-half to twice the rate of the indigenous population (Barnes, 1982).

In Leicestershire, Dhariwal (1982) calculated a PMR of 19.7/1000 in the Asian population compared with 11.3/1000 in the non-Asians for 1980; the Asian population in Leicestershire being mainly Gujarati Indians from East Africa (MacVicar, 1981). In the same population, Clarke and Clayton (1983) found that the increased Asian PMR persisted even after social class, parity, height, legitimacy and the general practitioner's qualifications were taken into account. Terry, Condie and Settatree (1980), at Dudley Road Hospital in Birmingham, found a significantly higher rate during 1979 in the Indians at 27.5/1000 when compared with the Europeans at 13.5/1000. This was a study of 4026 deliveries and the rates in the West Indian and Pakistani populations at 16.6/1000 and 19.2/1000 were also higher than in Europeans but not significantly so. This trend is not reported everywhere. Tuck *et al.* (1983), in a study of 2632 consecutive deliveries at Dulwich Hospital of mothers of various ethnic origins, found no racial difference in perinatal mortality or morbidity. Dawson, Golden and Jonas (1982), in a study of 6000 Punjabi Indian and 18000 European deliveries between 1967 and 1975 at Hillingdon Hospital in West London, found no significant difference in the PMR between these two groups.

One factor emerging from this study was that Sikh babies were lighter for dates, or putting it another way—for a given weight were more mature than the European babies. However, a study in Birmingham (Clarson *et al.*, 1982) has shown an increasing birth weight, over a ten-year period in Pakistani pregnancies suggesting some environmental influence on the baby's weight over this short period of time.

The majority of studies on perinatal mortality in this country in populations from the Indian subcontinent have, however, shown a higher rate. This increased rate of perinatal death could theoretically be attributed to a whole variety of factors such as inadequate maternal diet, or the poor use of health services (Lumb, Congdon and Lealman, 1981). Intervention projects have already started in the form of dietary supplementation (Viegas *et al.*, 1982a and b) and trying to improve services (Lumb, Congdon and Lealman, 1981).

TABLE 1.1 Ethnic distribution of mothers delivered and type of birth at Dudley Road Hospital, Birmingham, from 1979 to 1982 inclusive

	Indian	*Pakistani*	*Bangladeshi*	*West Indian*	*European*	*Other*	*Total*
Mothers	4203	2196	470	1846	6495	229	15 438
Twins (sets)	38	26	5	23	76	2	170
Deliveries	4241	2221	475	1869	6571	231	15 608
Normal stillbirth	31	20	4	9	42	2	108
Congenital abnormality	56	28	2	10	57	0	153
Normal live birth	4154	2173	469	1850	6472	229	15 347
Normal neonatal death	26	17	4	14	31	3	95
Total stillbirth	38	23	4	11	50	2	128
Total neonatal death	39	31	5	14	39	3	131
Early neonatal death	39	30	4	14	29	3	119
Total perinatal death	77	53	8	25	79	5	247

TABLE 1.2. Ethnic distribution of stillbirths, neonatal deaths and perinatal mortality rates/1000 among mothers delivered at Dudley Road Hospital, Birmingham, from 1979 to 1983 inclusive

Ethnic group	*Stillbirth rate*	*Neonatal death rate*	*Perinatal mortality rate*
Indian	9.0	9.3	18.2[a]
Pakistani	10.4	14.1[b]	23.9[b,c]
Bangladeshi	8.4	10.6	16.8
West Indian	5.9	7.5	13.4[d]
European	7.6	6.0[e]	12.0[e,f]
Total	8.2	8.5	15.8

χ^2 with Yates's correction
[a]Difference from the European group $P<0.05$
[b]Difference from the European group $P<0.001$
[c]Difference from the West Indian group $P<0.05$
[d]Difference from the Pakistani group $P<0.05$
[e]Difference from the Pakistani group $P<0.001$
[f]Difference from the Indian group $P<0.05$

Crude perinatal mortality and morbidity figures conceal a number of often unrelated pathologies which may have different ethnic distributions. Thus, although the perinatal mortality rate may be similar or different between groups, the contribution made by these pathologies may be very different. Further breakdown in the pathology of mortality and morbidity makes significant differences even harder to find, unless the numbers involved are enormous.

The ethnic distribution of mothers delivered at Dudley Road Hospital, Birmingham, over a four-year period (1979 to 1982), together with an outline of the type of birth (i.e. liveborn, stillborn, etc.) is shown in *Table 1.1* and the mortality rates in *Table 1.2*. In our study, the PMR in both Indians and Pakistanis was higher than in the European and West Indian groups (*Table 1.2*). A proportion of this increase was due to more Indian and Pakistani lethal congenital abnormalities. Allowing for this there was still an excess of perinatal deaths in these two groups which seems to be distributed between both stillbirth and neonatal death.

Congenital abnormality

More information about the distribution of disease, if not the determinants, can be gained by the division of perinatal mortality and morbidity into normally formed

stillbirths, normally formed neonatal deaths, and major lethal and non-lethal congenital abnormalities. This classification has the advantage of including not only all perinatal deaths but also late neonatal deaths and major non-lethal congenital abnormalities which are becoming more important with the recent advances in neonatal care.

Ethnic studies in this country that have attempted to subdivide perinatal mortality and morbidity are few but interesting. Barnes (1982) in Bradford examined infant deaths due to congenital abnormality between 1975 and 1979 and found between a two and five times increased incidence in his predominantly Pakistani Asian population. Many of the abnormalities in the Bradford Pakistani population were multiple but there was no excess due to neural tube defects. However, a later study in Bradford found a higher rate of neural tube defects in Bradford Asians (Gilles *et al.*, 1981).

The Bradford workers felt that consanguinity in the Pakistani population may be an aetiological factor in the higher congenital abnormality rate, a theory that has gained support from Czeizel and Revesz (1970), Gatrad, Read and Watson (1984) and Klingberg *et al.* (1971). Rao and Inbaraj (1977), however, in a study of the Tamil Nadu of South India found no significant increase in the incidence of congenital malformations as a result of consanguinity. In Bradford there was a 48 per cent rate of first cousin marriage in Pakistanis (Gillies *et al.*, 1984); a rate very similar to that found in the Dudley Road Hospital Pakistani population (Terry *et al.*, 1985). It is worth noting that the suggestion that consanguinity leads to malformation in Islamic populations is not accepted in such communities and there are obvious confounding variables such as maternal age. Where there is a considerable genetic mix, for instance in the West Indian population, the congenital abnormality rate is low.

Division of the Leicestershire perinatal deaths into stillbirths and neonatal deaths (Dhariwal, 1982) showed that neither contributed more significantly to the increased perinatal mortality rate in the Asian population. However, there was an increased rate of lethal congenital abnormalities in the Asian population which, unlike in Bradford, contained an increased incidence of neural tube defects when compared with the European population. Searle (1959), in a study in Singapore, found a much higher incidence of anencephaly in Sikhs. This higher rate of neural tube defects in the Leicestershire Gujarati Indian population which did not occur in the Bradford Pakistani population of Barnes (1982), illustrates the importance of both defining an ethnic group as carefully as possible and classifying the causes of perinatal pathology. However, many multiple abnormalities defy easy classification.

Other workers (Leck, 1969; Naggan, 1971; Naggan and MacMahon, 1967) have shown a decrease in the incidence of some abnormalities in a population with a high incidence when moved to an area with a low incidence, clearly suggesting an environmental aetiology. However, the rate rarely falls to the level found in the indigenous population.

Examination of the components of perinatal mortality and morbidity reveals interesting differences and the Birmingham and Bradford workers agree that complex multiple congenital abnormality is commoner in Pakistanis. The higher rate of neural tube defects found in the Leicestershire Indians has not been noticed in Bradford.

In our study the congenital abnormality rate was higher in both the Indian and Pakistani groups compared with the Europeans. *Tables 1.3* and *1.4* illustrate the