Review of Perinatal Mortality in BAOR 1970-1984

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SUMMARY: For the past 15 years the perinatal mortality rate (PNMR) in the five British Military Hospitals in West Germany and West Berlin has, with one exception, remained below the rate for England and Wales. The military hospitals deal virtually exclusively with the Service dependant population, although there are a few obstetric cases from dependants of BFES and PSA. We present the results for the period 1970-1984 and offer explanations for the difference along with recommendations for the future.

Introduction

In the United Kingdom PNMR is defined as the sum of the total number of stillbirths and neonatal deaths which occur in the first week, expressed as a ratio of a thousand total births occurring in that same population. Stillbirths are legally defined¹ as occurring after 28 weeks completed gestation. Over the past 15 years however the assignation of "life" to a child which subsequently dies has been occurring at increasingly early gestation.

We feel that PNMR is still the most accurate way of assessing the quality of care and effects of improved medical facilities, as it relies on a definite diagnosis (namely death). Whilst it would be increasingly useful to have a measure of morbidity in the living none has yet been invented that overcomes the problems of inter-observer variation and the different levels of diagnostic facilities at their disposal.

Results

The following data have been collated from the Annual Returns from the Military Hospitals and from data from the Office of Population Censuses and Surveys (OPCS). Table 1 shows the PNMR for England and Wales for 1970-1984 contrasted against that for the BMHs in Germany (BAOR).

By plotting these figures (Fig 1) using a three year moving average, it can be seen that in the period 1972-1977 the relative improvement in both groups was the same. In the years 1977-1981 there is continuing improvement in the PNMR in England and Wales whilst the PNMR worsened in BAOR, but since 1981 there has been a dramatic improvement in the PNMR in BAOR, such that the overall improvement between 1970 and 1984 has paralleled that in England and Wales.

Discussion

Throughout all but one of the past 15 years, the PNMR in BAOR has been below that for England and Wales. The limited data available restricted the degree of statistical analysis. However, by dividing the period into five consecutive groups of three years and treating the deaths in each population as observations from a binominal distribution, statistical analysis of the observations between the two populations showed there to be a significant difference in each three year period except 1979-1981.

The absolute rate of improvement in PNMR has been approximately the same in both populations. This is surprising as part of the improvement in the England and Wales figure has been attributed to an increase in the number of hospital deliveries². This does not apply in Germany where all deliveries during this 15 year period have taken place in BMHs (apart from an occasional birth before arrival). Hence the improvement in PNMR in BAOR must reflect the impact of more advanced obstetric and paediatric care, or a change in the welfare of our patients. There is no evidence of any great change in our patients' welfare, as the Army has always tried to ensure its dependants are housed, clothed and fed adequately.

The three major determinants of perinatal mortality are low birthweight, congenital abnormalities and birth asphyxia; these account for 80% of perinatal mortality between them. The incidence of low birthweight has been reduced by the introduction of ultrasound scanning to ascertain gestational age, thereby reducing the incidence of unintended premature induction of labour. Ultrasound scanning was available at BMH Rinteln in 1976 and throughout BAOR by 1980. It is not possible from our data to show that its routine use has improved

Figure 1 Graph comparing the PNMR's of BAOR against those of England & Wales using 3 year moving averages.

Points are plotted against the middle year of each set of 3 years.

perinatal mortality, although it is probably one of the factors contributing to its reduction.

Ultrasound has certainly assisted in the antenatal diagnosis of severe fetal abnormalities, such as neural tube defects, exomphalos, etc³. In this field it has complemented amniocentesis (diagnosing chromosomal, genetic and biochemical disorders) and the alpha foeto protein (AFP) screening programme for neural tube defects⁴ and other abnormalities. However all of these tests will only reduce the PNMR if affected pregnancies are terminated. Maternal serum AFP screening was available from 1981 and although it is again impossible (from the data here) to prove it reduced the PNMR, our personal experience of pregnancies terminated before 28 weeks for fetal abnormality suggests it helped.

Table I
Perinatal Mortality Rate Per 1000 Births – 1970–1984

Year	England & Wales	BAOR
1970	23.4	14.4
1971	22.2	20.3
1972	21.8	19.1
1973	21.0	16.7
1974	20.3	16.4
1975	19.2	12.5
1976	17.7	11.7
1977	16.9	13.6
1978	15.5	11.9
1979	14.6	14.3
1980	13.3	13.1
1981	11.8	14.6
1982	11.2	9.5
1983	10.4	6.8
1984	10.1	5.5

Birth asphyxia remains a continuing problem and its avoidance, without over-treating normal labours with Caesarean section or instrumental delivery, remains elusive^{5,6}. Foetal blood sampling, although advocated by its enthusiasts, is not used in BAOR (nor is it in five out of six obstetric units in the UK⁷) and its introduction may not reduce the incidence of birth asphyxia, although it may reduce the number of operative deliveries.

The other classical factors affecting the PNMR are maternal age, parity and socio-economic class. PNMR is lowest in the range of 20–29 years⁸ where most of our deliveries occur, although a substantial number do occur in the higher risk under-20 group. It is also lowest in the second pregnancy,⁸ after which it rises (particularly in the fifth and subsequent pregnancies). Our data are not comprehensive enough to enable closer analysis of the effects of these two major variables on our results, and

we are not able to comment on the difference afforded by socio-economic class. It is worth noting that in BAOR there are no mothers unsupported by a breadwinner.

Whilst further studies of the population differences are required to exclude them as the major determinant of the better PNMR in BAOR we feel that the following points also contribute to our better results:-

- The active, full time, commitment of consultant obstetricians in all aspects of patient care – antenatal, intrapartum and postnatal.
- The smaller number of deliveries in each unit allowing closer attention by the consultants to difficult cases (although this also applies to the 20% UK obstetric units which deliver between 400 and 1500 babies annually⁷).

- Better liaison between the hospital staff and local GPs.
- The dedication of our paediatric colleagues, frequently working with limited staff and facilities.
- The willingness of our midwives to fulfill their extended role (instituting intravenous infusions and suturing the perineum) thus leaving the obstetricians free to deal more thoroughly with their obstetric problems.

Further improvements will be hard to maintain. The only population change likely to help is further education to prevent cigarette smoking in pregnancy, a factor well documented as affecting the PNMR.² This is, however, a problem in West Germany where cheap cigarettes are available to service dependants and it is unlikely to change. The damage cheap tobacco does to

the British Serviceman has been detailed at some length^{9,10}.

The Short Report¹¹ made many recommendations for the improvement of facilities and staffing levels in the NHS. However, like the NHS the Army Medical Services have been unable to achieve the improvements recommended. Staffing levels of three nurses to every intensive care cot and one to each special care cot, as initially advocated in the Sheldon Report in 1979,¹² have not been realised. Staffing of labour wards to ensure that one midwife is available to care solely for one woman in labour is often not achieved, partly because current staffing levels are insufficient. The recent UK survey of labour ward staffing levels by the National Birthday Trust⁷ showed an average of just under 2 midwives per woman in labour, with 0.5 nurses per woman in labour also present. In medical staffing, there is a shortage of senior paediatric staff, thus devolving more responsibility onto junior staff than is ideal. There is currently no shortfall in senior obstetric staff in BAOR. However, to continue our ability to maintain good results it is essential that current levels of staffing are maintained and hopefully improved, particularly as far as the paediatricians are concerned.

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