Satellite meeting: 
Alpha fetoprotein in diagnosis and screening

A full day’s meeting devoted to alpha fetoprotein (AFP) diagnosis and screening, with 25 presented papers, is a daunting prospect. Amniotic fluid and maternal serum AFP assays have been in fairly routine use for over a decade. Even the newcomer, acetylcholinesterase, was first reported in 1978. Nevertheless, the success of AFP screening in reducing the birth prevalence of neural tube defects, as well as the opportunities that it presents as an additional mode for prevention of Down’s syndrome births, should keep the subject in view of all those concerned with reduction in incidence of serious birth defects.

Several papers presented data on AFP screening in countries where it is still an infant programme: Hungary (J Szabo), Switzerland (P Grob), Israel (R Shomrat), and Finland (M Rynnanen), in the last named the target being congenital nephrosis rather than neural tube defects. In some areas pilot programmes on research funds have not been translated into routine service, the problems being economic and political rather than technical. The potential of maternal serum AFP assay as one of the best general indicators of high risk pregnancies was documented by Burton (USA), Ferguson-Smith (UK), Szabo (Hungary), and Legum (Israel). This point was made repeatedly, as it has been made many times before, that such screening has value even in localities with a comparatively low incidence of neural tube defects.

This theme was amplified by the emerging data on the relationship between low maternal AFP and Down’s syndrome. The most comprehensive programmes have been run in the United States (Burton, Crandall, Greenberg), though there were also reports from Denmark (Norgaard-Pedersen), Finland (Rynnanen), and Germany (Voigtlander).

There is now little doubt that a combination of screening by maternal age and low serum AFP is more effective than by maternal age alone in detecting Down’s syndrome fetuses. But whether and how cytogenetics laboratories can cope with the large extra load of amniotic fluid samples is an unresolved issue. The scientifically respectable solution of karyotyping amniotic fluid samples where the primary indication is low serum AFP, and not where the indication is high serum AFP, appears too unacceptable to most obstetricians, either for economic (USA) or social/emotional (rest of the world) reasons.

When a chorionic villus sample (CVS) is taken, there is often a rise in maternal serum AFP levels within 24 hours. There is a possibility that the magnitude of this rise may have diagnostic value for the pregnancy. Szabo (Hungary) and Fuhrmann (Germany) both presented data suggesting that a doubling of the serum AFP value over the pre-CVS level was quite a potent indicator of impending fetal loss. Both series were small and will need confirmation, as will the intriguing suggestion by Milunsky (USA) that a very low pre-CVS maternal AFP may signal a chromosome abnormality.

The last session of the day concluded with a review by Ferguson-Smith (UK) of the impact of maternal serum AFP screening on the incidence of neural tube defects in the community. The West Scotland programme, covering 1976 to 1985, has screened 220,000 pregnancies to date and must be the largest of this type attempted. By careful analysis of live births, stillbirths, and terminations, Ferguson-Smith was able to conclude that they had reduced the birth incidence of neural tube defects by 74%. No other prenatal screening programme can claim figures anywhere near this.