Maternal serum α fetoprotein concentrations in mid trimester in hepatitis B surface antigen positive and negative subjects

M J KITA U,* P GRINT,† R HEATH,† T CHARD*

From the Departments of *Obstetrics, Gynaecology, and Reproductive Physiology, and †Virology, St Bartholomew's Hospital Medical College and the London Hospital Medical College, London

SUMMARY Maternal serum α fetoprotein (AFP) was measured as part of a routine antenatal screening programme in 48 patients positive for hepatitis B surface antigen (HBsAg). After exclusion of two cases with obvious obstetric abnormalities there was no difference in AFP concentrations between subjects who were positive or negative for HBsAg.

Measurement of maternal serum α fetoprotein (AFP) in mid trimester is now in widespread use as a screening procedure for neural tube defects of the fetus. The only specific factors known to affect AFP concentrations during pregnancy are fetal complications: neural tube defects; certain other congenital abnormalities such as exomphalos; multiple pregnancy; and intrauterine death. It is well known, however, that AFP concentrations may be raised in association with hepatic disorders in non-pregnant subjects, including those who are HBsAg positive.^{1 2} In this district some 1% of mothers are identified as HBsAg positive, and it is theoretically possible that AFP concentrations might be abnormal in these subjects. The aim of the present study was to evaluate AFP concentrations in mothers positive for HBsAg and to compare them with those in a normal population.

Subjects and methods

Samples were taken from 48 HBsAg positive subjects at 16-20 weeks of pregnancy. With two exceptions, none of these subjects had any complication which would be associated with abnormal AFP concentrations. These samples had been collected as part of routine screening programmes for neural tube defects. Maternal serum AFP was measured by radioimmunoassay.³ HBsAg was measured by radioimmunoassay (Hepatube, Wellcome Diagnostics) and HBeAg by enzyme immunoassay (Abbott-HBe EIA, Abbott Laboratories). Seventeen of the 48 subjects were HBeAg positive and 31 were negative. The normal range for maternal serum AFP (median and 2.5

times the median) was that used in a routine clinical service in the North East Thames Region. An additional control group was selected, comprising 100 women at 16 weeks of pregnancy who were HBsAg negative. The mean concentrations of AFP in the control and HBsAg positive groups were compared using Student's *t* test after logarithmic transformation of the data.

Results

Five of the 48 subjects positive for HBsAg had high concentrations of AFP, and in two cases the increase was substantial (362 and 540 U/ml); these two subjects delivered a dead fetus three and five days after sampling. The mean concentration of AFP in 19 subjects positive for HBsAg at 16 weeks' gestation (29.6 U/ml) did not differ significantly from that in 100 negative subjects (28.7 U/ml). Two of the 100 subjects in the control group had AFP concentrations more than 2.5 times the median. There was no obvious difference between the subjects who were HBeAg positive and negative.

Discussion

The incidence of increased concentrations of maternal serum AFP in a normal population, using 2.5 times the median as the cut off point, is about one in 50. In the present study five of 48 subjects positive for HBsAg had increased concentrations. Two of these were associated with fetal death, a well recognised obstetric cause of increased AFP.⁴ After excluding these subjects the incidence of three of 46 is not sufficient to conclude that there is any systematic

association between raised concentrations of AFP and a positive HBsAg test. Furthermore, for subjects examined at 16 weeks' gestation, there was no difference between AFP concentrations in HBsAg positive and negative subjects. These findings suggest that there is no striking abnormality of AFP concentrations, in HBsAg positive subjects, and that results in this group can be interpreted in relation to the normal range for the general population.

References

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Requests for reprints to: Professor T Chard, Department of Reproductive Physiology, St Bartholomew's Hospital Medical College, West Smithfield, London EC1A 7BE, England.