

Prospective Screening for Down's Syndrome Using Maternal Serum AFP

Maternal serum alphafetoprotein (MSAFP) has been used for many years to screen for neural tube defects. Recently, an association between low MSAFP levels and fetal chromosomal anomalies has been observed. It has been postulated that maternal screening for neural tube defects could be used not only to look for high AFP levels, which indicate a risk of a neural tube defect, but also for low values to identify prospectively fetuses with Down's syndrome. In this paper, the physicians responsible for the Connecticut genetics program reviewed their data from MSAFP screening for neural tube defects during the last four years. The normal values of alphafetoprotein must be adjusted for gestational age, maternal weight, and maternal age.

Women 35 years of age and older at the time of delivery have traditionally been offered prenatal diagnosis for chromosomal abnormalities. However, women less than 35 years old have not been offered prenatal diagnosis routinely because of the relatively low risk of having a child with a chromosomal abnormality. These authors suggest that when an inappropriately low MSAFP level is found in women under 35, a second trimester amniocentesis should be offered. They calculate that if their criteria for identifying low MSAFP levels are used, and if women under 35 with low MSAFP levels are offered amniocentesis, one amniocentesis out of 350 would be positive for a chromosomal problem. The present screening policy for chromosomal anomalies in the fetuses of women over 35 years of age is estimated to identify only 10% to 20% of all Down's syndrome pregnancies. Using low MSAFP levels to screen mothers under 35 years of age would be expected to identify an additional 20% to 25% of cases. Thus, the authors suggest that using the combined approach of amniocentesis or chorionic villi

sampling in women over 35 plus MSAFP screening with subsequent amniocentesis for those with low values could be expected to identify up to 50% of all children with Down's syndrome prior to 20 weeks of gestation.

Baumgarten A, Schoenfeld M, Mahoney M, et al: *Lancet* 1985;1:1280-1281.

Editor's comment—With the institution of maternal screening for alphafetoprotein in most states, it is anticipated that many fetal abnormalities will be identified. This type of program, which is aimed at identifying neural tube defects, will certainly detect a large number of fe-

tuses with anencephaly and spina bifida in the absence of a positive family history. In addition, a number of other abnormalities associated with high alphafetoprotein levels (eg, Turner's syndrome and hydrops) will be found.

One outgrowth of the MSAFP screening program has been the recognition that a low MSAFP level may also have important diagnostic ramifications since fetuses with Down's syndrome have, on the average, low alphafetoprotein levels in amniotic fluid and maternal serum. The pathogenetic mechanism is unclear, but the potential usefulness of screening is obvious. The costs of such a program may be enormous, but it would appear that if these authors' calculations are correct, the cost:benefit ratio favors this approach.

Growth Without Growth Hormone: Evidence for a Potent Circulating Human Growth Factor

The investigators present a case report of a boy with poor growth and growth hormone (GH) deficiency who, at 4½ years of age, began to grow spontaneously at an accelerated rate (more than 7 cm/yr for more than five years). His bone age rapidly advanced from 3.6 to 12 years and he became massively obese. Repeat GH testing showed inadequate responses to pharmacologic stimuli, whether measured in the immunoreceptor or radioreceptor (IM-9 cell) assay. Somatomedin-C/insulin-like growth factor I (Sm-C/IGF-I) levels were within the hypopituitary range when measured by radioimmunoassay.

Laboratory investigation was undertaken to try to determine the etiology of the patient's accelerated growth. Relative somatomedin bioactivity by the embryonic chick pelvic rudiment method was nearly the same as that of a reference pool from normal children. The patient's serum had very great activity in an assay of erythroid progenitor cells (measuring

burst-forming units), indicating the presence of a circulating growth factor different from those usually described.

Geffner ME, Lippe BM, Bersch N, et al: *Lancet* 1986;1:343-347.

Editor's comment—This single case report may provide evidence for the growth observed in some children with intracranial tumors before or after therapy. Some children grow well despite low levels of GH and Sm-C. Many are obese, as is this child. His serum obviously contains a growth factor (at least for erythroid progenitor cells) that is not derived from epithelial, nerve, fibroblast, or platelet growth factors, since these are inactive in the BFU-E bioassay under the conditions employed. It is from the study of such patients and the extraction and purification of the appropriate "growth factor" that therapeutic strategies can be developed for short children and probably for those needing an anabolic but nonandrogenic agent (eg, patients with severe burns or debilitating nutritional disorders).