

Thesis Title Investigation of specific Index for pre-natal diagnosis of neural tube defects and other affected pregnancies

Name Orawan Makemaharn

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(Medical Technology)

Thesis Supervisory Committee Watcharee Attatippaholkun, Ph.D.  
Napatawn Banchuin, M.D.  
Sujin Kanokpongsakdi, M.D.  
Sabiang Srivannaboorn, M.D.

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### ABSTRACT

A total of 184 amniotic fluids from unaffected pregnancies and 21 affected pregnancies at 15-28 weeks of gestation were analysed for ten routine biochemical test such as sodium, potassium, chloride, carbondioxide, total protein, albumin, glucose, creatinine, urea, uric acid and two outstanding biochemical markers such as acetylcholinesterase and alpha-fetoprotein. The alphafetoprotein assay was also analysed in 967 maternal sera from unaffected pregnancies at 5-38 weeks of gestation and 38 maternal sera from affected pregnancies.

The amniotic fluid glucose, creatinine and uric acid concentration showed a correlation with 15-28 weeks of gestation ( $r = -.3626$ ,  $r = .2179$ ,  $r = .3683$ ) respectively ( $p$  value  $< 0.001$ ,  $< 0.01$  and  $< 0.001$ ). The only glucose in ten routine biochemical indices has been found to be of value in prediction for anencephalic, other affected pregnancies ( $p$  value  $< 0.05$ ) and no significant differences for Down syndrome ( $p$  value  $> 0.05$ ) when compared to normal pregnancies. This index may be useful in small and unfacilitated hospitals.

The amniotic fluid acetylcholinesterases, in anencephalic pregnancies, their average mean values were 7.5804 mu/ml and showed significant differences from average mean value of normal unaffected pregnancy ( $p < 0.05$ ).

The amniotic fluid alphafetoprotein assay were above 3.0 MOM in anencephalic pregnancies and will be diagnostic test for open neural tube defects.

The maternal serum alphafetoprotein assay, six of nine samples (66.7%) from Down syndrome were below 1.0 MOM, two of nine samples (22.2%) were between 1.0-2.0 MOM and one of nine samples (11.1%) were above 2.0 MOM. The maternal serum alphafetoprotein was also below the median values in two of three samples from autosomal trisomies, whereas five of nine samples (55.6%) from 18-28 weeks of anencephalic pregnancies were above 3.0 MOM. Three of nine samples (33.3%) from anencephalic pregnancies were between 1.0-2.0 MOM.

The maternal serum alphafetoprotein assay may prove to be screening test for affected pregnancies and confirmatory test by acetylcholinesterase assay, ultrasonography and amniotic fluid cultures for prenatal diagnosis of open neural tube defects (such as anencephaly) and Down syndrome.

The maternal serum alphafetoprotein levels expressed as multiples of the median were significantly lower in distribution of these women than those from group of normal matched control subjects ( $p < 0.001$ ). We proposed that a low level of maternal serum alphafetoprotein obtained through routine screening may prove to be valuable in improving the prenatal detection of the serious anomalies.