Ultrasound (USG) is a useful investigation in obstetrics. Its mean indications include screening for fetal anomaly, especially for Down's syndrome and other genetic trisomy. Here, the author tries to access the compatibility between classical USG scoring index and the new likelihood ratio-based system. New recommendation on severity of studied markers is given.

**Key words:** Index, likelihood ratio, ultrasound

### Materials and Methods

First, the author collected the data on the classification system of the classical USG scoring index and new likelihood ratio-based technique. Direct comparison based on the group of abnormalities of USG scoring index was done. The confidence intervals of likelihood ratios
corresponding to soft marker and major marker groups were calculated. The overlapping of the confidence intervals in soft marker and major marker groups was determined and used for further adjustment on classical classification system, focused on severity, of present marker in soft marker and major marker groups.

**Results**

The comparative assessment of both classification systems was done [Table 1]. According to this work, the confidence intervals of likelihood ratios corresponding to soft marker and major marker groups were equal to 4.3-31.7 and 0-7.5, respectively. The overlapping of the confidence intervals in soft marker and major marker groups was detectable at the range between 4.3 and 7.5. According to the adjustment, the two markers, previously set in soft marker group, “short femur” and “hyperechoic bowel,” are recommended to be included in the major marker group [Table 2].

**Discussion**

Ultrasound evaluation is an important tool in present obstetrics. Mahieu-Caputo et al. said that “One of the major progress in fetal medicine in recent years is the increased sensitivity of sonographic screening for fetal malformations, due to technical improvement but also to a better training of professionals.”[12] At present, USG screening for fetal abnormalities is rapidly becoming part of routine antenatal care.[13] The routine anomaly scanning is done in the second trimester but there may be a case for screening at other periods.[13] The clinical usefulness of the USG depends somewhat on the expectations for it. USG is best at detecting malformations, which distort surface anatomy, and it is surely not to be expected to find deep occult anomalies such as imperforate anus or hypospadias. Conversely, detection of overt gross anomalies such as spina bifida or abdominal wall defects is very easy. Since there are several possible findings due to USG investigation ranging from no abnormal observation to gross anomaly, there is a need to have a system to classify the observed findings from screening. USG scoring is the classical tool to serve this purpose.[15,14] Based on this system, the clustering of markers forms the basis of the scoring index, such that each marker is assigned point values based on the sensitivity and specificity in the detection of fetal anomaly due to chromosome defect, especially for Down’s syndrome.[14] Combining the genetic sonogram with maternal serum screening can be a very good method of assessing chromosome defect risk for pregnant who desire such an assessment in the second trimester.[15]

Recently, Bromley et al. evaluated the accuracy of the USG scoring index in detecting Down’s syndrome fetuses in a high-risk population, and it appeared that this technique could be used to identify approximately 75% of fetuses with Down’s syndrome.[16]

Manning concluded that “It seems reasonable to effect continued modification and improvement of the score as a means of antepartum fetal risk assessment.”[17] Indeed, the revision of the classical USG scoring system by adding of a new marker has ever been proposed in the medical literature. Absence of the nasal bone is the mentioned marker.[18] However, this marker is difficult to examine[19] and, therefore, not routinely used in general obstetrical practice.

Recently, a new likelihood ratio-based technique was proposed.[11] A good agreement between USG scoring

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**Table 1: Comparison of ultrasound scoring index and likelihood ratio-based technique for classification of disorder detected by Ultrasound**

| Groups                  | USG scoring index | Likelihood ratio-based technique |
|-------------------------|-------------------|----------------------------------|
| No marker               | 0                 | 0.4                              |
| Soft marker             |                   |                                  |
| • Short femur           | 1                 | 1.5                              |
| • Choroid plexus cyst   | 1                 | 1.5                              |
| • Pyelectasis           | 1                 | 1.5                              |
| • Echogenic intracardiac focus | 1   | 1.8                              |
| • Hyperechoic bowel     | 1                 | 6.7                              |
| • Short humerus         | 1                 | 5.1                              |
| Major marker            |                   |                                  |
| • Major structural anomalies | 2       | 25                               |
| • Nuchal fold thickness | 2                 | 11                               |

**Table 2: Adjusted classification for Ultrasound scoring index**

| Soft marker | Major marker |
|-------------|--------------|
| • Short femur | • Short femur |
| • Choroid plexus cyst | • Choroid plexus cyst |
| • Pyelectasis | • Pyelectasis |
| • Echogenic intracardiac focus | • Echogenic intracardiac focus |
| • Major structural anomalies | • Major structural anomalies |
| • Nuchal fold thickness | • Nuchal fold thickness |
| • Hyperechoic bowel | • Hyperechoic bowel |
| • Short humerus | • Short humerus |
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index and new likelihood ratio-based technique was observed by Winter et al.[20] This implies the concordance between the two systems. However, it can be easily observed that the likelihood ratios are variable among disorders within already set soft marker and major marker groups. The new classification of the disorders into soft marker and major marker groups due to the difference in their likelihood ratios can be done and can be helpful in increasing the classical sensitivity of diagnosis. In this work, the author found that there are two markers (short femur and hyperechoic bowel) of classical minor marker group that fell in the overlapping range between confidence intervals in soft marker and major marker groups. Hence, it is suggested that these two disorders should be re-classified into the new major marker groups.

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Cite this article as: Wiwanitkit V. Adjusted classification for ultrasound scoring index for antenatal detection of fetal trisomy. Indian J Hum Genet 2012;18:226-8.

Source of Support: Nil, Conflict of Interest: None declared.