



Editorial

Is it useful to measure uterine wall thickness to predict preterm delivery of pregnant women with adenomyosis?

Adenomyosis and its variants (adenomyoma) are still a biggest challenge in routine clinical practice, because they affect not only the reproductive performance (infertility, pregnancy loss) but also worse outcome of pregnancy (preterm labor, intrauterine growth retardation, postpartum hemorrhage and uterine rupture) [1–5]. In the September issue of the *Taiwanese Journal of Obstetrics and Gynecology*, Dr. Kim and colleagues have published a very impressive article entitled “Uterine wall thickness at the second trimester can predict subsequent preterm delivery in pregnancies with adenomyosis” [6]. We are of great pleasure to introduce this article based on the its potential value for clinical practice.

The authors retrospectively evaluated 57 women with diagnosed uterine adenomyosis and/or adenomyoma who had pregnancy, and a total of 14 women were complicated with preterm delivery (delivery before 37 weeks of gestational weeks) [6]. The authors performed a series of ultrasound to monitor these pregnant women and found the adenomyosis uterine wall might play a critical role for future preterm delivery [6]. The main findings include (1) more thicker uterine wall associated with higher risks of preterm delivery; and (2) less change of the uterine wall in women with preterm delivery during the early and middle-stage pregnancy (from the first trimester to the second trimester) [6], suggesting that measurement of uterine wall thickness might provide the information of pregnant women with adenomyosis. This may be the novel finding and worthy of our attention.

There are many biomarkers available in the prediction of preterm delivery; unfortunately, there is not a single or combined screening method good enough to predict the preterm delivery rate [7]. Recently, Oskovi Kaplan and Ozgu-Erdinc have classified three useful markers to predict preterm delivery [7]. The first is maternal characteristics, including maternal obesity, low gestational weight gain, low maternal body mass index, maternal infection, periodontal disease, and maternal vitamin D deficiency [7,8]. The second is ultrasound markers, containing short cervical length, lower cervical consistence (strain elastography and shear wave elastography to assess cervical elastography), larger uterocervical angle by measuring angle between lower uterine segment and cervical canal ($\geq 95^\circ$ or $\geq 105^\circ$), higher uterine artery pulsatility index during peak uterine contraction, lower placental strain ratio, lower central zone of fetal adrenal gland, as well as lower fetal middle cerebral artery pulsatility index [7]. The final marker is the biomarkers, such as measurement of cervical fluid components (high fetal fibronectin, higher interleukin 6, higher interleukin 8, placental alpha macroglobulin-1, insulin-like growth factor binding protein-1); check-up of amniotic fluid components (low amniotic fluid glucose, higher interleukin 6, higher matrix metalloproteinase-8, elevated levels of interleukin 1 β , higher

interleukin 8, and higher Annexin-A2); evaluation of maternal serum markers (higher maternal serum calponin 1, higher ratio of maternal serum alpha fetoprotein/amniotic fluid alpha fetoprotein, lower maternal serum progesterone-induced blocking factor, and higher maternal plateletcrit count); measurement of maternal salivary estriol level (low); and final study of proteomic change of pregnant women, including at least 25 different-type proteins, such as antioxidant enzymes, chaperons, cytoskeleton proteins, cell adhesion molecules, and protein involving angiogenesis, proteolysis, transcription, inflammation, binding, and transportation of various ligands [7]. The presence of so many markers in the prediction of the risk of preterm delivery suggests that none of them are specific and sensitive.

That is why we congratulated the success of publication by Dr. Kim's group. However, we also doubt the sensitivity or specificity of using the data (measurement of the non-specific and/or localized uterine wall) to predict the risk of preterm delivery, since this approach is seldom reported before. In the literature review, the very similar strategy for the above-mentioned measurement is the measurement of the lower uterine wall thickness (lower segment of the uterus thickness) [9–11]. It makes sense to measure lower uterine wall thickness, based on the well defined location and high correlation to the well accepted data (cervical length) [9–11]. In fact, transvaginal sonographic assessment of the cervix (cervical length measurement) is one of the most popular and acceptable tools to predict the risk of preterm delivery, regardless of which trimesters are tested [12]. It is well known that the shorter the cervix, the higher the risk [12]. However, the correlation between cervical length and preterm delivery is sometimes hard to apply in the clinical practice, because the risk is not linear [12], and technique is difficult [10]. To overcome the limitations, there are many additional ultrasound parameters to be tested. The purpose of these additional parameters is tried to enhance the sensitivity rate and specificity rate of measurement of cervical length in the prediction of the preterm delivery. For example, amniotic fluid sludge (the sonographic presence of dense hyperechogenic matter in the amniotic fluid close to the internal os); cervical consistency index, determined using anterior-posterior diameter measurements of the cervix with and without cervical pressure; and uterocervical angle as well as the lower uterine wall thickness have been reported to increase the prediction rate of preterm delivery [7,9–13]. However, there is still absent of large-scaled prospective randomized trials to verify their feasibility. Therefore, it is doubtful that only single data could successfully predict the preterm delivery in pregnant women with adenomyosis.

Uterine adenomyosis can be classified based on the generalized and localized distribution of the adenomyosis tissue within the

uterus wall [14,15]. The impact of the localized adenomyosis (adenomyoma) and generalized adenomyosis on the reproductive performance and pregnancy outcome is theoretically significantly different [4]. In addition, the measurement of the thickness of uterine wall, regardless of location, might not be reproducible. It had better define where the uterine wall should be measured. For example, it can be measured the following well-documented uterine wall, such as uterine wall above the uterine cervix (lower uterine wall or lower uterine segment), or above the uterine vessel (the clear site to separate the uterus and cervix). It is fortunate that the authors have clear demonstrated that they measured the maximal thickness of the anterior uterine wall as ultrasound biomarkers to predict the preterm delivery in pregnant women with adenomyosis in the first and second trimester of the pregnancy, we still doubt the reproducibility of the thickness. For example, uterine contraction might be one of the most common factors affecting the thickness of the uterine wall. In addition, localized uterine adenomyoma might be the other factor, which is frequently asked.

To improve the maternal-fetal care needs to decrease the rate of preterm delivery. We hope more studies focus on this topic.

Conflicts of interest

The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

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