correlation between lung volumes, MG, LBC, birth weight and delivery week was investigated.
Results: The lung volume was different between preterm and term fetuses (104.8 ± 42.8 and 140.6 ± 27.3, $P = 0.016$). It also increased longitudinally throughout gestation between 26 and 40 weeks (from 31.7 to 221.9). MG was not statistically significantly different between groups (20.3 ± 18.6 in preterm fetuses and 18.4 ± 21.2 in term fetuses, $P = 0.39$). Lung area was lower in preterm fetuses than in term fetuses (29.1 ± 7.03 and 46.5 ± 8.8, $P = 0.02$). LBC was lower in preterm fetuses than in term fetuses ($59\,000 \pm 51\,000$ and $121\,000 \pm 89\,000$, $P = 0.012$). Lung volume had a strong and significant positive correlation with gestational week ($r = 0.431$, $P = 0.02$) and 5-min Apgar score ($r = 0.570$, $P = 0.002$).
Conclusions: Fetal lung volume measurement with VOCAL may be a reliable technique in the assessment of fetal lung maturity.

OC146
Ultrasonographic and hormonal evaluation of maternal–fetal thyroid status in normal pregnancy and premature birth in women with or without iodine deficiency disorders

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Objectives: This study examined the interrelations between maternal and neonatal thyroid function in women who had term and premature deliveries from iodine-deficient (ID) and iodine-sufficient (IS) regions, by measuring maternal and fetal thyroid volumes (TVs; less than 24 h before delivery) and TSH concentrations in mothers and newborns (from cord blood immediately after delivery).
Methods: The study included 95 mother–newborn pairs, divided into four groups: 15 mothers from an IS area who delivered prematurely, 16 mothers from an ID area who delivered prematurely, 41 mothers from an IS area who delivered at term, and 23 mothers from an ID area who delivered at term. Serum concentrations of TSH were evaluated by a microparticle enzyme immunoassay, and TVs in mothers and fetuses were measured by ultrasonography with high-resolution equipment (Accuvix XQ).
Results: TVs were lower in fetuses from IS areas than ID areas ($P < 0.002$), but were similar in fetuses born at term or prematurely. The TV in fetuses (1.27 ± 0.1 mL) correlated highly with TSH in newborns ($r = 0.79$, $P < 0.001$), negatively correlated with maternal urinary iodine ($r = -0.74$, $P < 0.001$) and correlated with maternal TV (16.75 ± 1.62 mL) ($r = 0.47$, $P < 0.02$).
Conclusions: These results confirm that TV status in newborns and their mothers depends on the severity of iodine deficiency more than prematurity. The influence of prematurity on thyroid function in newborns is aggravated by concomitant iodine deficiency.

OC147
Mathematical decision trees vs. clinician-based algorithms in the diagnosis of endometrial disease

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Objectives: Most diagnostic algorithms have been built by clinicians using accuracy figures for the different tests and also based on their 'clinical intuition', but few decision trees have been challenged by mathematicians.
Methods: The data from 402 consecutive patients presenting at the department's 'one-stop bleeding clinic' were used in this study. The patients subsequently underwent a transvaginal gray-scale ultrasound examination with color Doppler imaging, hydrosonography, office hysteroscopy and endometrial sampling. The data were entered into an algorithm designed by clinicians (Algorithm 1) and into a mathematical decision tree (Algorithm 2). The data from the first 281 cases (70%) were used to train the mathematical algorithm; the remaining cases were used to validate this algorithm. Both algorithms were evaluated in terms of diagnostic accuracy, cost, patient discomfort and clinical feasibility.
Results: The clinical algorithm proposed ultrasound as the primary investigation whereas the mathematical model proposed office hysteroscopy as the initial diagnostic test. The sensitivity and specificity for diagnosis of endometrial disease was 75.5% and 82.5% respectively for Algorithm 1 vs. 86.7% and 93.3% respectively for Algorithm 2. The mean number of tests needed to reach the diagnosis was 2.1 for Algorithm 1 and 1.8 for Algorithm 2. The average cost per patient was € 91.5 for Algorithm 1 vs. € 70.6 for Algorithm 2. The mean pain score (using the visual analogue scale) was 5.9 for the clinical algorithm vs. 6.5 for the mathematical decision tree.
Conclusions: The mathematical decision tree scored better in terms of diagnostic accuracy and cost, but caused more patient discomfort. This decision tree does not address clinical concerns such as the disturbance of the ultrasound image caused by previous intrauterine manipulation and might not be feasible as a one-stop diagnostic pathway.

OC148
Adenomyosis: sonographic findings before and after insertion of levonorgestrel intrauterine system

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Objectives: Recently it has been reported that a levonorgestrel intrauterine system (LNG-IUS) could be an effective and safe method in the treatment of adenomyosis. The aim of this study was to assess whether the sonographically detectable morphological alterations of the myometrium induced by adenomyosis changed after insertion of the LNG-IUS.
Methods: Twenty premenopausal symptomatic (menorrhagia, severe dysmenorrhea) patients with sonographic findings typical of adenomyosis were enrolled into the study. Before and at least 6 months after insertion of the LNG-IUS all the patients underwent detailed transvaginal sonography which evaluated uterine diameters and volume, endometrial thickness, presence and dimension of myometrial cystic areas, thickness of uterine wall and asymmetric myometrium, presence of myometrial hyperechoic striation, presence of fibroids or adenomyomas and vascularization of the myometrial lesions. A comparison between dimensions and presence of these different signs of adenomyosis before and after insertion of the LNG-IUS was performed.
Results: Eleven patients become amenorrhoic and the other patients had a significant reduction in menstrual bleeding. Dysmenorrhea was completely relieved or significantly alleviated in all patients. We observed a significant decrease in uterine volume (785.3 ± 232.8 mL vs. 522.6 ± 166.1 mL) and reduction in asymmetric wall thickness (37.4 ± 5.8 mm vs. 29.2 ± 5.6 mm). However sonographic signs of adenomyosis such as myometrial cystic areas and hyperechoic striation did not disappear; some decreased in size but not significantly.
Conclusions: After insertion of a LNG-IUS in patients with adenomyosis, uterine volume decreased, the myometrial wall shrank and symptoms were significantly alleviated. However sonographic signs of adenomyosis did not seem to disappear completely. LNG-IUS seems to be an effective prolonged therapy for symptoms but not a cytoreductive treatment for adenomyosis.