Medical termination of pregnancy (MToP) in the first trimester – the role of hCG and ultrasound in pregnancy diagnosis and MToP follow-up

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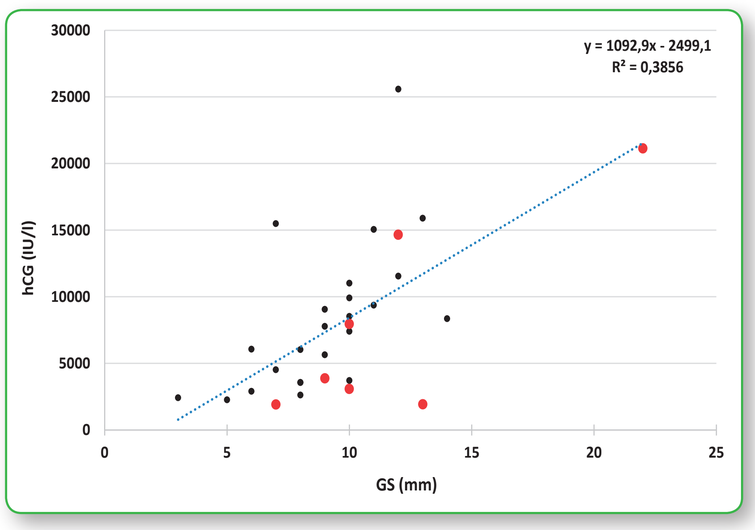
Objective: In the Czech Republic (CR), it is possible, to carry out Medical Termination of Pregnancy (MToP) in the 1st trimester in case the ultrasound examination confirms an intrauterine singleton prosperous pregnancy, between day 42 and 49 of gestation, crown-rump length (CRL) of the embryo 2-9 mm. The aim of the study is to analyze the importance of serum/urine human chorionic gonadotropin (hCG) assessment and ultrasound (US) examination in pregnancy diagnosis and MToP follow-up.

Methods: Cohort (prospective) study. In 2016-2017, MToP was carried out in a total of **109** women. The diagnosis of an intrauterine singleton prosperous pregnancy was set by transvaginal ultrasound, CRL 2-9 mm. MToP was carried out by combination of mifepristone (600 mg orally) and misoprostol (400 mcg orally) within 48 hours. Serum/urine (low sensitivity urine pregnancy test, LSUP test) hCG assessment and US examination was perfomed in pregnancy diagnosis and MToP follow-up after 2-5 weeks.

Results: In pregnancy diagnosis, there was a medium strong positive correlation between serum hCG and gestational sac ($r = 0.711$; $p < 0.0001$) and CRL ($r = 0.605$; $p < 0.0001$). Gestational age was 42-49 days (average 45.6, median 45), the women were 16-44 years of age (average 29.4, median 29). In MToP follow-up, serum hCG > 1000 IU/l was present in **13.8%** of women (15/109) and positive LSUP test in **17.4%** (20/109). US examination diagnosed ongoing pregnancy in five women and missed abortion in one woman (serum hCG was always > 1000 IU/l and LSUP test always positive). In **5.5%** of women (6/109), a subsequent surgical intervention was carried out including ongoing pregnancy (n = 5); missed abortion (n = 1) was treated by additional misoprostol, not by surgery.

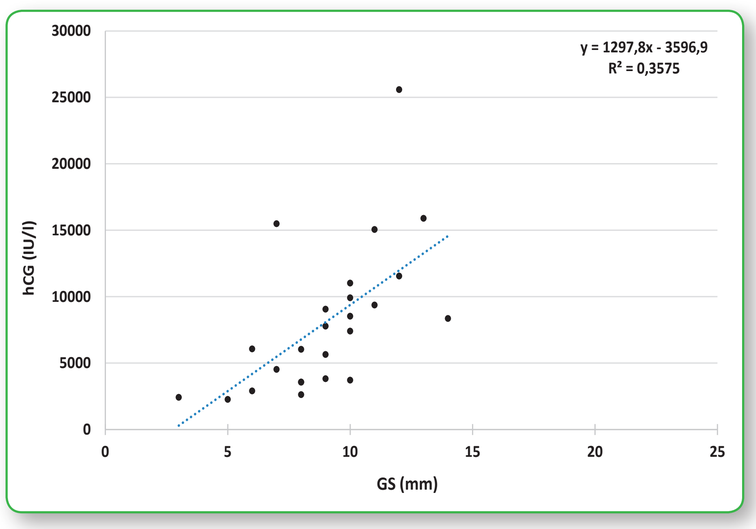
Conclusion: In pregnancy diagnosis, there is a medium strong positive correlation between serum hCG and CRL. In MToP follow-up, a negative LSUP test enables reliable exclusion ongoing pregnancy and missed abortion, in case of a positive LSUP test, US examination should be performed; however, surgical intervention should not be indicated solely on the basis of uterine cavity dilatation.



Pregnancy diagnosis - correlation between serum hCG and US finding in the uterine cavity

Intrauterine singleton pregnancy, the embryo with blood circulation pulsation still was not present (n = 32). In 21.9% of women (7/32), a subsequent unprosperous pregnancy was diagnosed (red). The strength of association between hCG and GS was measured using Spearman correlation coefficient. There was a medium strong positive correlation: $r = 0.600$; $p = 0.0003$. The slope of regression line showed the trend, there is a regression equation and coefficient of determination, denoted R^2.

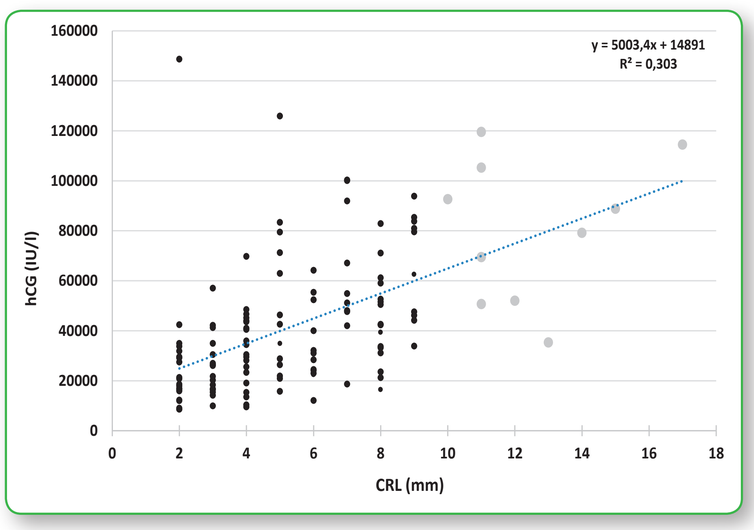
human chorionic gonadotropin (hCG),ultrasound (US), gestational sac (GS)



Pregnancy diagnosis - correlation between serum hCG and US finding in the uterine cavity

Intrauterine singleton pregnancy, the embryo with blood circulation pulsation still was not present, only subsequently prosperous (n = 25). The strength of association between hCG and GS was measured using Spearman correlation coefficient. There was a medium strong positive correlation: $r = 0.711$; $p < 0.0001$. The slope of regression line showed the trend, there is a regression equation and coefficient of determination, denoted R^2.

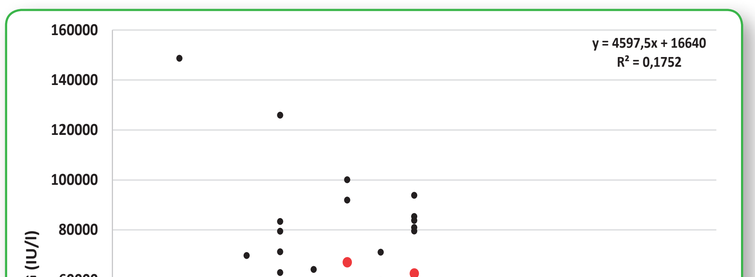
human chorionic gonadotropin (hCG),ultrasound (US), gestational sac (GS)



Pregnancy diagnosis - correlation between serum hCG and US finding in the uterine cavity

Intrauterine singleton pregnancy, the embryo with blood circulation pulsation was present, CRL ≥ 2 mm (n = 130). In 7.7% of women (10/130), CRL > 9 mm was present and MToP was not carried out (grey). In 9.2% of remaining women (11/120), MToP follow-up was missed (black). The strength of association between hCG and CRL was measured using Spearman correlation coefficient. There was a medium strong positive correlation: $r = 0.605$; $p < 0.0001$. The slope of regression line showed the trend, there is a regression equation and coefficient of determination, denoted R^2.

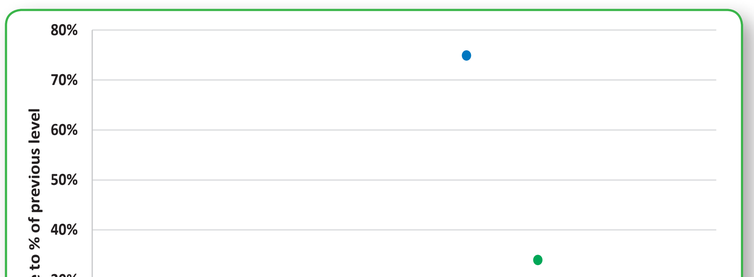
human chorionic gonadotropin (hCG),ultrasound (US), crown-rump length (CRL), medical termination of pregnancy (MToP)



Pregnancy diagnosis - correlation between serum hCG and US finding in the uterine cavity

Intrauterine singleton pregnancy, the embryo with blood circulation pulsation was present, only CRL 2-9 mm, the MToP and follow-up was carried out (n = 109). In 4.6% of women (5/109), a subsequent „Ongoing pregnancy" was diagnosed (red). The strength of association between hCG and CRL was measured using Spearman correlation coefficient. There was a medium strong positive correlation: $r = 0.526$; $p < 0.0001$. The slope of regression line showed the trend, there is a regression equation and coefficient of determination, denoted R^2.

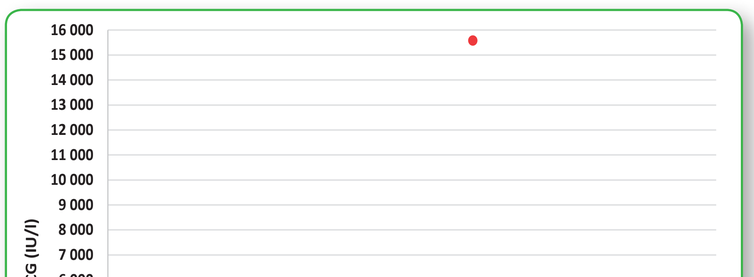
human chorionic gonadotropin (hCG),ultrasound (US), crown-rump length (CRL)



MToP follow-up – serum hCG decrease

MToP follow-up check,excluding„Ongoing pregnancy" (n = 104). In one woman (hCG decrease to 2.6%), an „Incomplete abortion" was diagnosed and treated by Surgery (red). In one woman (hCG decrease to 34%), a missed abortion was diagnosed and treated by additional misoprostol (green). In one woman (hCG decrease to 74.9%), an „Incomplete abortion" was diagnosed with expectant management (blue).

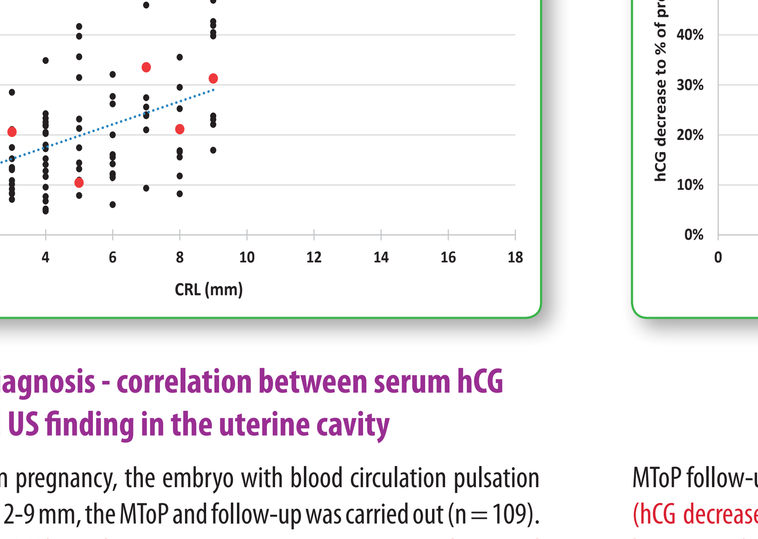
medical termination of pregnancy (MToP), human chorionic gonadotropin (hCG)



MToP follow-up – serum hCG

MToP follow-up check; excluding „Ongoing pregnancy" and missed abortion, but serum hCG was always > 1000 IU/l (n = 103). In 8.7% of women (9/103), serum hCG > 1000 IU/l was present (red). In 13.8% of women (15/109), serum hCG > 1000 IU/l was present including„Ongoing pregnancy" (n = 5) and missed abortion (n = 1).

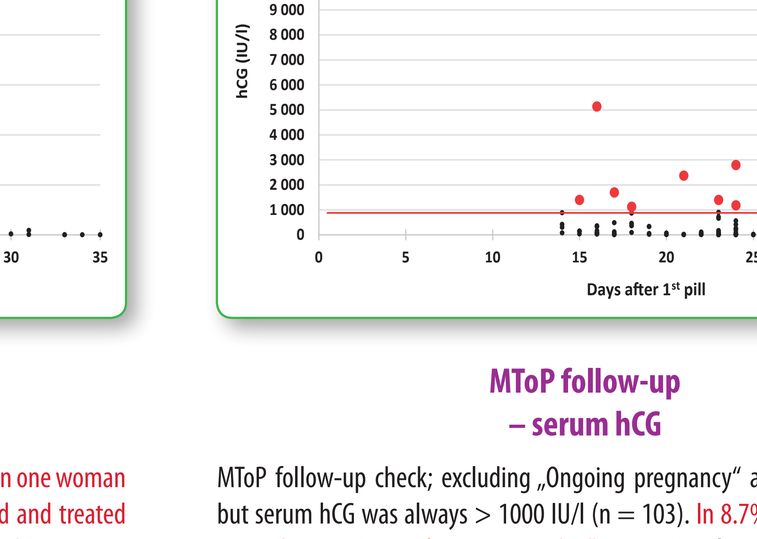
medical termination of pregnancy (MToP), human chorionic gonadotropin (hCG)



MToP follow-up – serum hCG / LSUP test

MToP follow-up check; excluding„Ongoing pregnancy" and missed abortion, but serum hCG was always > 1000 IU/l and LSUP test always positive (n = 103). In one woman, false negative LSUP test was present (green). In six women, false positive LSUP test was present (red). In 17.4% of women (20/109), positive LSUP test was present including„Ongoing pregnancy" (n = 5) and missed abortion (n = 1).

medical termination of pregnancy (MToP), human chorionic gonadotropin (hCG), low sensitivity urine pregnancy (LSUP) test



MToP follow-up – US uterine cavity dilatation

MToP follow-up check; excluding „Ongoing pregnancy" and missed abortion (n = 103). In 1% of women (1/103), a subsequent surgical intervetion was carried out (red). In 5.5% of women (6/109), a subsequent surgical intervention was carried out including "Ongoing pregnancy" (n = 5); missed abortion (n = 1) was treated by additional misoprostol, not by surgery.

medical termination of pregnancy (MToP), ultrasound (US)