**SUPPLEMENTAL TABLE S1**

The distribution of gestational week when the progesterone was tested.

|  |  |  |  |
| --- | --- | --- | --- |
| Gestational week | no. | % | Progesterone level, nmol/LMean ±SD (Range) |
| 4 | 111 | 5.97 | 74.6±24.5 (31.9, 127.3) |
| 5 | 307 | 16.51 | 71.1±21.3 (25.0, 127.3) |
| 6 | 469 | 25.21 | 63.6±20.0 (21.1, 127.3) |
| 7 | 694 | 37.31 | 61.3±20.3 (20.8, 127.3) |
| 8 | 170 | 9.14 | 68.3±20.3 (32.9, 127.3) |
| 9 | 81 | 4.35 | 72.4±20.5 (39.9, 127.3) |
| 10 | 28 | 1.51 | 80.6±24.8 (38.4, 127.3) |
| Total | 1860 | 100.00  | 65.7±21.3 (20.8, 127.3) |

Abbreviations: SD, standard deviation.

**SUPPLEMENTAL TABLE S2**

Maternal progesterone concentration in early pregnancy and the time of delivery by progesterone in quartiles.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | N | Progesterone level, nmol/L, Mean ±SD (Range) | Test week,in weeks + days, Median (IQR) | Gestational age (time of delivery) , in weeks + days, Median (IQR) | *p*a |
| Median | 1860 | 65.7±21.3 (20.8, 127.3) | 7+0 (6+0，7+4) | 39+4 (38+5 ,40+1) |  |
| **Quartiles** |  |  |  |  |  |
| 1st Quartile | 463 | 42.4±6.2 (20.8, 50.3) | 7+1 (6+2, 7+4) | 39+4 (38+6 ,40+1) |  |
| 2nd Quartile | 462 | 56.2±3.3 (50.4, 62.2) | 7+1 (6+1, 7+4) | 39+4 (38+5 ,40+1) | 0.511 |
| 3rd Quartile | 470 | 68.9±4.5 (62.3, 77.3) | 6+6 (6+0, 7+5) | 39+2 (38+5 ,40+1) |  |
| 4th Quartile | 465 | 95.1±15.3 (77.4, 127.3) | 6+4 (5+3, 7+5) | 39+4 (38+5 ,40+1) |  |

Abbreviations: SD, standard deviation; IQR, interquartile range.

a *p* for the comparison of the length of gestation in the four progesterone concentration quartiles using log-rank test.

**SUPPLEMENTAL TABLE S3**

Crude and adjusted hazard ratios for risk of spontaneous preterm delivery according to maternal serum progesterone concentration in sensitive analysisa.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Progesterone concentration, quartiles | Total No. | No. of case | CrudeHR (95% CI) | AdjustedHR (95% CI) b |
| 1st quartile | 463 | 16 | 0.89 (0.45, 1.74) | 1.21 (0.55, 2.65) |
| 2nd quartile | 462 | 19 | 1.06 (0.56, 2.02) | 1.52 (0.72, 3.19) |
| 3rd quartile | 470 | 16 | 0.89 (0.45, 1.74) | 1.37 (0.63, 2.96) |
| 4th quartile | 465 | 18 | Ref. | Ref. |
| Continuous, per 10 nmol/L increased | 1860 | 69 | 1.01 (0.91, 1.13) | 0.95 (0.84, 1.08) |

Abbreviations: CI, confidence interval; HR, hazard ratio
a The cases who missed information on cause of preterm delivery were consider as censored.

b Adjusted for age (continuous), smoking during pregnancy (yes/no), second hand smoking exposure during pregnancy (yes/no), pre-pregnancy BMI (continuous), previous history of preterm birth (nulliparous, multipara and ≥37 weeks, multipara and<37 weeks), vaginal bleeding during pregnancy (yes/no), use of progesterone drugs during early pregnancy.

**SUPPLEMENTAL TABLE S4**

Crude and adjusted hazard ratios for risk of delivery or spontaneous delivery according to maternal serum progesterone concentration among women who had used progesterone drugs (n=968)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Progesterone concentration, quartiles | Total No. | No of preterm births | UnadjustedHR (95% CI) | AdjustedHR (95% CI)\* |
| **Risk of preterm delivery** |  |  |  |  |
| 1st quartile | 299 | 17 | 0.78 (0.39, 1.55) | 1.29 (0.59, 2.84) |
| 2nd quartile | 250 | 13 | 0.71 (0.34, 1.49) | 1.15 (0.50, 2.62) |
| 3rd quartile | 213 | 16 | 1.03 (0.51, 2.09) | 1.66 (0.75, 3.68) |
| 4th quartile | 206 | 15 | Ref. | Ref. |
| Continuous, per 10 nmol/L increased | 968 | 61 | 1.08 (0.97, 1.20) | 0.99 (0.88, 1.12) |
| **Risk of spontaneous preterm delivery** |  |  |  |  |
| 1st quartile | 299 | 14 | 0.87 (0.40, 1.92) | 1.69 (0.66, 4.29) |
| 2nd quartile | 250 | 12 | 0.89 (0.39, 2.02) | 1.60 (0.62, 4.14) |
| 3rd quartile | 213 | 13 | 1.14 (0.51, 2.55) | 2.05 (0.80, 5.28) |
| 4th quartile | 206 | 11 | Ref. | Ref. |
| Continuous, per 10 nmol/L increased | 968 | 50 | 1.04 (0.91, 1.17) | 0.94 (0.82, 1.08) |

Abbreviations: CI, confidence interval; HR, hazard ratio
\*Adjusted for age (continuous), smoking during pregnancy (yes/no), second hand smoking exposure during pregnancy (yes/no), pre-pregnancy BMI (continuous), previous history of preterm birth (nulliparous, multipara and ≥37 weeks, multipara and<37 weeks), vaginal bleeding during pregnancy (yes/no).

**SUPPLEMENTAL TABLE S5**

Crude and adjusted hazard ratios for risk of delivery or spontaneous delivery according to maternal serum progesterone concentration among women who had not used progesterone drugs (n=757)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Progesterone concentration, quartiles | Total No. | No of cases | UnadjustedHR (95% CI) | AdjustedHR (95% CI)\* |
| **Risk of delivery** |  |  |  |  |
| 1st quartile | 129 | 1 | 0.25 (0.03, 2.03) | 0.30 (0.04, 2.53) |
| 2nd quartile | 179 | 6 | 1.09 (0.37, 3.25) | 1.25 (0.40, 3.90) |
| 3rd quartile | 221 | 6 | 0.89 (0.30, 2.64) | 1.02 (0.33, 3.18) |
| 4th quartile | 228 | 7 | Ref. | Ref. |
| Continuous, per 10 nmol/L increased | 757 | 20 | 1.08 (0.89, 1.32) | 1.01 (0.81, 1.26) |
| **Risk of preterm birth** |  |  |  |  |
| 1st quartile | 129 | 1 | 0.29 (0.04, 2.42) | 0.35 (0.04, 3.07) |
| 2nd quartile | 179 | 6 | 1.28 (0.41, 3.95) | 1.51 (0.46, 4.97) |
| 3rd quartile | 221 | 2 | 0.35 (0.07, 1.71) | 0.42 (0.08, 2.17) |
| 4th quartile | 228 | 6 | Ref. | Ref. |
| Continuous, per 10 nmol/L increased | 757 | 15 | 1.08 (0.86, 1.36) | 0.99 (0.76, 1.29) |

Abbreviations: CI, confidence interval; HR, hazard ratio
\*Adjusted for age (continuous), smoking during pregnancy (yes/no), second hand smoking exposure during pregnancy (yes/no), pre-pregnancy BMI (continuous), previous history of preterm birth (nulliparous, multipara and ≥37 weeks, multipara and<37 weeks), vaginal bleeding during pregnancy (yes/no).



Figure S1.

Survival curves of preterm delivery for each quartile of progesterone concentration based on Cox proportional hazards regression model (n=1860).

Survival time is the time of preterm delivery, and term deliveries (≥259 days, 37 weeks) are considered as censoring events. Adjusted for age (continuous), smoking during pregnancy (yes/no), second hand smoking exposure during pregnancy (yes/no), pre-pregnancy BMI (continuous), previous history of preterm birth (yes/no), parity (0, ≥1),vaginal bleeding during pregnancy (yes/no), and use of progesterone drugs during early pregnancy (yes/no).