

Preserve the newborn versus cigarettes smoke: Expired air carbon monoxide concentration in mothers above 3 ppm is associated with decreased fetal growth

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BACKGROUND

Smoking during pregnancy is associated with reduced birthweight

Some previous studies shown that smoking reduction may also improve birthweight

Relationship between maternal expired air carbon monoxide (CO) concentration (EACO)/ Intra uterine growth restriction (UIGR) has not yet been evaluated

MATERIALS

Multi-centre French study; 262 smokers women

Inclusion criteria: Age range 18 – 48 years; Smokers women : until 1 cigarette per day and under 3 ppm; Informed consent

Exclusion criteria: No consent ; No smokers women ; Women non included : twin pregnancy, reported alcohol abuse or dependance, drugs addiction

METHODS

First aim :

Evaluated the rate of giving up of the women during the pregnancy with CO screening (EACO)

Showed the occurrence of the intra uterine growth restriction (IUGR) < 10e percentile or < 5e percentile

RESULTS

Results on the weight of baby

| N = 262 | Weight average | Percentile average | Number of UIGR < 10 ^{ème} percentile | Number of UIGR < 5 ^{ème} percentile |
|--------------------------------|----------------|--------------------|---|--|
| No stop (203) | 2968 ± 587 | 33,81 ± 25,54 | 40 (19,7%) | 26 (12,8%) |
| Stop 1 st trim (26) | 3267 | 42,65 | 3 | 2 |
| Stop 2 nd trim (22) | 3291 | 49,09 | 2 | 0 |
| Stop 3 rd trim (11) | 2980 | 32,92 | 2 | 1 |
| Total give up (59) | 3222 ± 524 | 43,24 ± 24,53 | 7 (11,9%) | 3 (5%) |
| p | 0,0030 | 0,0124 | 0,1673 | 0,0961 |

If smoking during the pregnancy

254 g
On less

Chute de
9,43 of
percentile

More UIGR

Results on the diseases during the pregnancy

| N = 262 | Pre-éclampsia | Diabetis gestationnal | MAP | Terme average | Number of preme |
|---------------------------------|---------------|-----------------------|-----------|---------------|-----------------|
| No stop (203) | 6 (3,0%) | 21 (10,3%) | 10 (5,6%) | 38,73 WA | 24 (11,8%) |
| Stop 1 st trim. (26) | 2 | 1 | 1 | 39,57 WA | 1 |
| stop 2 nd trim. (22) | 1 | 1 | 1 | 39,54 WA | 3 |
| stop 3 rd trim. (11) | 0 | 1 | 0 | 39,05 WA | 0 |
| Total stop (59) | 3 (5,1%) | 3 (5%) | 2 (3,4%) | 39,46 WA | 4 (6,7%) |
| p | 0,7007 | 0,2181 | 0,7709 | 0,0265 | 0,2708 |

« If you do not smoking during pregnancy »

Twice more
Gestational diabetes

1 week in less

Twice more
Of premature.

Results on the delivery

| N = 262 | Natural delivery | Cesar section | extraction |
|--------------------------------|------------------|---------------|------------|
| No stop (203) | 135 (66,5%) | 44 (21,7%) | 24 (11,8%) |
| Stop 1 st trim (26) | 20 | 6 | 0 |
| Stop 2 nd trim (22) | 12 | 4 | 6 |
| Stop 3 rd trim (11) | 6 | 3 | 2 |
| Total stop (59) | 38 (64,4%) | 13 (22,0%) | 8 (13,55%) |
| p | 0,7648 | 0,9531 | 0,7199 |

NS : no difference between the differents deliveries

Comparaison effectifs théoriques/effectifs observés

| Previsions | Observations |
|---|--------------------------------------|
| 300 smokers women in first trimester of pregnancy | 262 smokers women in first trimester |
| 100 give up during pregnancy (1/3) | 59 stopped during pregnancy (< 1/4) |
| 7% de IURC if give up | 5% of IUGR if stopped |
| 15% de IUGR if no stop smoking | 12,8% of IUGR if do not stop |

⇒ We need more datas for answer all the questions

CONCLUSION

- Beneficial effects of giving up smoke during the pregnancy
- The maternal CO screening during delivery, were dose dependently and inversely associated with fetal growth
- In conclusion the measurement of CO by pregnant women smokers is an essential element to achieve smoking cessation the pregnancy.