Impact of maternal age on caesarean delivery rate under epidural labor analgesia

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Background and Goal of study

It has been proposed that epidural analgesia is not related to the increase of caesarean delivery rate. However, some previous studies have shown that advanced maternal age was the independent risk factor for caesarean delivery.

The aim of this study is to determine whether the maternal age is associated with an increased risk of emergency caesarean delivery rate under epidural labor analgesia.

Methods

Study design Retrospective study

Eligibility criteria

Inclusion

- Women aged from 20 to 49
- Received epidural labor analgesia
- Delivered between 36 and 42 week's gestation, vaginally or by emergency caesarean section

Exclusion

- Women who had contraindications to labor
- Deliveries for abortion or fetal death

Statistical analysis

- Divided subjects into 3 age groups(<35, 35-39, 40< years)
- A bivariate analysis of each group and emergency cesarean rate was conducted with Chi-square test
- Used multivariate logistic regression analysis to assess the effect of age on outcomes adjusting for induction status, parity, and birth weight

Results 2

Table2 Emergency caesarean delivery rate among 3 age groups

	Delivery with Epidural labor analgesia	All delivery	p value
<35 years	12.9%	10%	0.29
35-39 years	18.9%	13%	0.29
40≤ years	36%	20%	0.01*

- In each group, emergency caesarean rate was 12.9%, 18.9%, 36.1% respectively.
- Regarding all the deliveries at our institution, emergency caesarean delivery rate in these 3 age groups was 10%, 13% and 20% respectively.

Table3 Odds ratio for emergency caesarean delivery by variables

Variables	OR	95% CI	p value
Age(vs. <35 years)			
35-39 years	1.36	0.59-3.15	0.46
40≤ years	3.45	1.41-8.45	<0.01*
Induced labor	1.52	0.74-3.11	0.98
Parity	2.91	0.09-0.871	0.26
Birth weight 4000g over	1.78		0.03

CI: confidence interval OR: odds ratio

- In the multivariate model, aged over 40 is a significant predictor of emergency caesarean delivery.

Results 1

Table1 Patient characteristics by maternal age

		<35 years N=116	35-39 years N=74	40< years N=36	p value
Mean age		29.8	36.7	41.4	<0.01*
Mean BMI(kg/m²)		25.8	25.9	25.8	0.99
Prior pregnancy		86(74.1%)	20(27.0%)	7(19.4%)	0.67
Gestational diabetes mellitus		10(8.6%)	10(3.5%)	8(22.2%)	0.09
Pregnancy induced hypertension		6(5.2%)	6(8.1%)	4(6.1%)	0.44
Induced labor		43(37%)	30(40.5%)	20(55.5%)	0.14
Emergency caesarean delivery		15(12.9%)	14(18.9%)	13(36.1%)	<0.01*
Birth weight(mean)		3083g	3170g	3066g	0.29
Apgar score	1min	7	8	7	0.08
	5min	8	8	8	0.26
Umbilical arterial pH		7.27	7.26	7.29	0.39

- There were 8164 deliveries in 5 years, and 226 parturients who received epidural labor analgesia were included to the study. They divided into the 3 age groups.
- The incidence of pregnancy-induced hypertension and gestational diabetes mellitus was not different among 3 age groups.

Discussion

- Our result demonstrates that there is an increase in the rate of emergency caesarean delivery when epidural labor analgesia is performed on women over 40 compared to women under 35.
- It has been reported that epidural labor analgesia does not increase the rate of caesarean delivery, and it is widely accepted that it increases the rate of instrumental delivery and prolong the total duration of labor.
- Generally speaking, parturients of advanced age are more likely to suffer from prolonged labor compared to younger women. Furthermore, epidural analgesia could potentially increase the length of labor for these women.
- Additionally, instrumental delivery has been reported to increase the risk of neonatal complications compared with caesarean delivery.
- According to these reasons, we speculated that caregivers are more prone to offer caesarean delivery to women of advanced age.

Conclusion

- Epidural labor analgesia for women over 40 is independently associated with the increase risk of caesarean delivery compared to parturient under 35.
- Although a causal relationship should be examined in a more randomized trial, prenatal care providers should discuss the risks and benefits of epidural analgesia for this age.