A Multicenter, Retrospective Comparison of Pregnancy Outcomes Between Groups of Preterm Labor in Nulliparous women Treated with Either Atosiban or Ritodrine

Ji Hye Jo[1], Jiwon Moon[1], Hong Yeon Lee[1], Seunghoon Han[2], In Yang Park[3]
[1]Department of Obstetrics and Gynecology, Yeouido St. Mary's Hospital, College of Medicine, The Catholic University of Korea,[2]Department of Pharmacology, College of Medicine, The Catholic University of Korea, [3]Department of Obstetrics and Gynecology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea

Background

Our objectives were to evaluate the safety and efficacy of atosiban and ritodrine in pregnant women who were hospitalized for threatened preterm labor(TPL).

Methods

Diagnosis records of preterm labor and subsequent pregnancy-related records and medical records of newborns were all extracted from the Clinical Data Warehouse of the Catholic Medical Center's affiliated hospital.
Since 2009, cases of preterm labor diagnosed before 34 weeks of pregnancy as first-time mothers who delivered at any one of three hospitals and who received drug treatment for more than 2 days to delay delivery were included in the dataset.
Due to the characteristics of Korea's national health insurance system, the drug treatment after diagnosis of preterm labor can be classified into cases using only ritodrine(571 women), cases using only atosiban(244 women), and cases where ritodrine treatment was started and then changed to atosiban(275 women). We analyzed the demographic factors, obstetric outcomes, neonatal outcomes between the two groups.

Results

- The duration and maintenance of pregnancy were found to be similar between two groups, although the initial cervical length was significantly shorter in the Atosiban group(AC).
- Only in multifetal pregnancies, the maintenance of pregnancy was significantly longer in the atosiban group.
- The total duration of pregnancy did not show any significant difference between the two groups regardless of singleton or multiple pregnancy.

Table 1. Baseline characteristics between cohorts

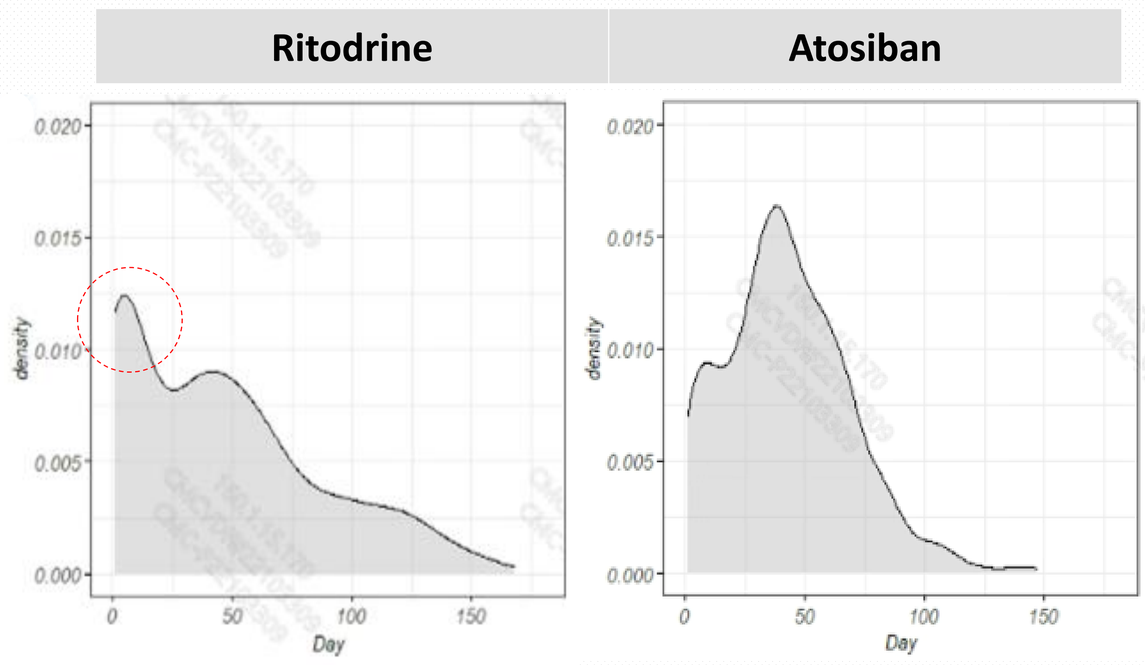
Variables	Cohort		p-value
	AC (N = 519)	RC (N = 571)	
Maternal Age (years)	32.6 ± 3.5	32.4 ± 3.8	0.25
Gestation Period at Diagnosis (days)	210.0 ± 20.7	206.5 ± 32.8	0.37
Number of Fetus(es)			<.001
Single (n, %)	341 (65.7%)	526 (92.1%)	
Multiple (n, %)	178 (34.3%)	45 (7.9%)	
Cervical Length at Diagnosis (cm)	2.26 ± 0.82	2.55 ± 0.94	<.001
Singleton	2.39 ± 0.82	2.61 ± 0.90	0.002
Multiple pregnancy	2.03 ± 0.77	2.09 ±1.11	0.89
Previous Miscarriage (n, %)	133 (25.6%)	133 (23.3%)	0.67
Prior Gynecological Surgery (n, %)	10 (1.9%)	5 (0.9%)	0.19

Table 2. Comparison of Pregnancy outcomes by the number of fetus

Variables	Singleton		p-value	Multiple Fetus		p-value
	AC (N = 341)	RC (N = 526)		AC (N = 178)	RC (N = 45)	
Duration of Pregnancy (days)	258.3 ± 19.9	253.6 ± 27.6	0.37	242.1 ± 20	239.1 ± 26.1	0.72
Maintenance of Pregnancy (days)	46.53 ± 27.3	47.23 ± 40.8	0.10	35.42 ± 22.7	31.38 ± 37.7	0.01
Cesarean section (n, %)	145 (42.5%)	217 (41.3%)	0.72	150 (84.3%)	31 (68.9%)	0.03

- From the distribution graph, it can be estimated that there is a non-responder group in the RC.

Fig 1. Distribution graph by the maintenance of pregnancy (from the date of first prescription to delivery)



- Our study showed a difference in neonatal birth weight of singleton between the two groups.
- The length of hospitalization and the NICU admission rate were also significantly higher in the RC group for singleton.
- Neonatal death was more common in the RC group (8 cases in AC and 18 cases in RC).

Table 3. Comparison of Neonatal outcomes by the number of fetus

Variables	Single Fetus		p-value	Multiple Fetus		p-value
	AC (N = 341)	RC (N = 526)		AC (N = 357)	RC (N = 90)	
Birth weight (g)	2756 ± 619.4	2620 ± 781.0	0.04	2124 ± 526.6	2038 ± 617.2	0.20
1-min Apgar score <7 (n, %)	85 (25.1%)	146 (27.9%)	0.4	166 (46.8%)	48 (53.3%)	0.32
5-min Apgar score<7 (n, %)	25 (7.4%)	59 (11.3%)	0.075	41 (11.5%)	11 (12.2%)	0.85
Total hospital stay (days)	9.1 ± 16.0	14.8 ± 27.9	<.0001	18.0 ± 23.4	22.3 ± 30.0	0.03
NICU admission (n, %)	111 (32.6%)	217 (41.3%)	0.009	222 (62.2%)	63 (70.0%)	0.18
Neonatal death (n, %)	4(1.2%)	14(2.7%)	0.15	4(1.1%)	4(4.4%)	0.055

Conclusion

- The use of atosiban for TPL is more effective in **maintaining pregnancy** in the case of multifetal pregnancy.
- In singleton pregnancies, **neonatal outcomes** were superior in the atosiban group than ritodrine group.
- There seems to be a non-responder group when using ritodrine for TPL.