

## Pregnancy Outcomes in Asthmatic Women

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### ABSTRACT

Asthma is considered to be the most common respiratory disorder complicating pregnancy. Seventy-six asthmatic and 152 non-asthmatic pregnant women were studied. Maternal asthma was significantly associated with adverse infant outcomes, including prematurity, low birth weight and the need for Cesarean delivery. The results of this study could indicate that pregnant women with asthma were at substantially increased risk for adverse infant outcomes and suggest the need for extra attention to mothers with asthma before and during pregnancy.

**Keywords:** Asthma; Pregnancy; Women

### LETTER

Overall 5.6% of pregnant women have been identified as being asthmatic. Studies of asthma prevalence in the United States suggest that the condition affects 1–4% of pregnancies.<sup>1</sup> Asthma is considered to be the most common respiratory disorder complicating pregnancy. Several epidemiological studies have indicated that pregnancies complicated by asthma are associated with a higher incidence of maternal and fetal complications including a greater risk of having a low birth weight,<sup>2</sup> an increased incidence of preterm delivery<sup>3</sup> or delivery by cesarean section.<sup>4</sup> Although some studies suggest that asthma is not associated with poor outcomes, most reports state that poor control of asthma and severe asthma itself are the greatest contributors to adverse perinatal outcomes.<sup>5,6</sup>

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This study was performed to determine whether adverse pregnancy outcomes are associated with asthma during pregnancy. Seventy-six asthmatic and 152 non-asthmatic pregnant women were studied. Approximately 7.5% of the mothers had high school education and 89.5% were housewives. About 19.3% of pregnant women were younger than 18 or older than 35 years and 26.3% of women had delivery by cesarean section. 2.6% and 8.4% of neonates were premature (Gestational age <37 wks) and had low birth weight (weight <2500 grams) respectively. After important confounding variables were accounted for, maternal asthma was significantly associated with adverse infant outcomes, prematurity, low birth weight and the need for cesarean delivery (Table 1). The frequencies of abortion and stillbirth in previous pregnancies of asthmatic mothers were 27.6% and 6.9% respectively which were significantly higher than control group (3.4% vs. 0%,  $p < 0.05$ ).

Most studies have shown that women who have a severe exacerbation of asthma during pregnancy are at a significantly increased risk of having a low birth weight infant compared with women without asthma. Currently, the mechanisms causing this outcome are unknown but Tamasi et al<sup>7</sup> found that the culminating proliferation of IFN-gamma+ and IL-4+ T lymphocytes may potentially impair maternal airway symptoms as well as fetal development in asthmatic pregnant women. Acs et al<sup>8</sup> showed that mothers with bronchial asthma in pregnancy had 0.6 week shorter gestational age and a higher proportion of preterm deliveries (14.1% vs. 9.1%). These findings were reflected with a lower mean birth weight (3,102 vs. 3,279 gram) and higher proportion of low birth weight newborns (9.0% vs. 5.6%). They concluded that the old fashioned anti-asthmatic drugs were not able to prevent the bronchial asthma-related preterm delivery, thus there is an urgent need to use modern inhaled medications. Jana et al found that uncontrolled severe asthma in 15 gravidas who required hospitalization, was associated with significant decrease in mean birth weight (2469 vs 2842 gram) and a significant high incidence of LBW neonates (53.3% vs. 20.5%) at mean gestational age of 38 weeks. They concluded that bronchial asthma during pregnancy, when optimally controlled does not affect the course of pregnancy and labour, and perinatal outcome. However, uncontrolled severe asthma leads to fetal growth retardation.<sup>9</sup> Dombrowski<sup>10</sup> showed that severe and poorly controlled asthma may be associated with increased prematurity, a need for cesarean delivery, preeclampsia, and growth restriction.

In our study the asthmatics were also more likely than other women to have delivery by cesarean section. The reasons that could explain the relationships between maternal asthma and frequency of cesarean

**Table 1. Frequencies of Low Birth weight, Premature labor and Caesarian Section in pregnancies of asthmatic and control group.**

Subjects	Low Birth weight				Premature labor				Type of delivery			
	Yes		No		Yes		No		caesarian section		Vaginal Delivery	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Case	18	24	57	76	5	6.7	70	93.3	31	41.3	44	58.7
Control	1	0.7	151	99.3	1	0.7	151	99.3	29	19.1	123	80.9
Total	19	8.4	208	91.6	6	2.6	221	97.4	60	26.4	167	73.6
	<i>P-value :0.0000</i>				<i>P-value : 0.0158</i>				<i>P-value : 0.0003</i>			

section are not definitely clear but may be due to mother's fear of vaginal delivery and her request for cesarean delivery. It seems that education of asthmatic women in order to reduce unnecessary operations is necessary. In our study three infants of asthmatic mothers were born with congenital anomalies (heart disease, dislocation of hip, syndactilia). This weak association could be explained by the higher proportion of preterm births in this group but it can be due to hypoxic effects on organogenesis or asthma medications during pregnancy.

Our results demonstrated that pregnant women with asthma were at substantially increased risk for adverse infant outcomes and suggest the need for extra attention to mothers with asthma before and during pregnancy. We suggest that it is necessary to integrate asthma control programs in Iran's health network.

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