Pregnancy outcome in women with inflammatory bowel disease

Ahmed M. Saleh, MD,
Halah I. Badroun, MD, Latifa W. Al-Khaldi, MD,
Hani M. Khalifa, MD, Maan A. Waggass, MD.

Inflammatory bowel diseases (IBD), Crohn's disease, and ulcerative colitis are chronic non-curable relapsing diseases with autoimmune pathogenesis. They commonly affect women during their reproductive years. It has been estimated that approximately 25% of female patients conceive after the diagnosis of IBD. This often raises concerns that the disease may adversely affect the outcome of pregnancy, and the pregnancy may also increase the exacerbation rate of the IBD.[1] Furthermore, there are concerns regarding the safety of the drugs used to treat these conditions during pregnancy on the fetal and neonatal development. Fortunately, most of the medical therapy used to treat IBD at the active phase and during maintenance of disease remission is Food and Drug Administration (FDA) category B, C, and D, and is considered to be safe for use during pregnancy and for nursing mothers. Regarding the effect of the disease on the pregnancy outcome, Dominitz et al[2] reported a two to threefold increase rate of spontaneous abortion, preterm labor, and low birth weight, intrauterine growth restriction, cesarean delivery, and increased risk of congenital malformations compared with the normal control.[2] Despite these results, perinatal mortality was not substantively different from the general obstetrical population. Several investigators have found these maternal and fetal complications were high in women with active disease at conception and/or exacerbations occur during pregnancy.[4] Whereas, patients in remission have no significant differences in maternal and fetal complications compared with normal controls. Accordingly, it is therefore recommended that patients with IBD attempt to conceive during a remission phase, and to maintain remission through medical therapy during pregnancy.[5] However, if conception occurs at the time of active disease, two-thirds will have persistent activity and of these, two-thirds will further deteriorate during pregnancy leading to bad obstetrical outcomes.[1,5] It has been shown that if conception occurs during a period of remission, approximately one-third of patients will relapse during pregnancy. There is a similar relapse rate occurring in non-pregnant patients.[5]

The objective of this retrospective study is to compare the maternal and fetal outcomes in patients with confirmed diagnosis of IBD (Crohn's disease and ulcerative colitis) before pregnancy with healthy control women who delivered during the same study period.

We performed a retrospective chart review of women diagnosed with IBD before pregnancy and normal control women who delivered at Riyadh Military Hospital, Riyadh, Kingdom of Saudi Arabia from January 2005 to December 2009. Ethical approval number 392 was obtained from the local Research and Ethical Committee. Pregnancies occurring in IBD patients were compared with almost triple the number of pregnancies occurring in the general obstetrical population delivered during the same study period. We excluded all women with no histological diagnosis of IBD and prepregnancy renal and significant cardiac or liver disease. A total of 330 charts were reviewed. Of these, 137 women met our inclusion criteria and were included in the analysis. A total of 31 women had IBD and were matched with 106 normal women as the controls (group 3) during the same study period. Four women (group 1) were diagnosed with Crohn's disease, and 27 women were diagnosed with ulcerative colitis (group 2). The characteristics of the study population were compared between the 3 groups, including: age, height, weight, parity, type of IBD (Crohn's disease or ulcerative colitis), use of preconception folic acid, history of previous lower segment cesarean delivery, pregnancy complications, gestational age at delivery, total blood loss, postpartum complications, and length of hospital stay. Characteristics of delivery (spontaneous or induced), analgesia used in labor, labor augmentation, length of labor (first, second, and third stages) and the mode of delivery are shown in **Table 1**. The senior pediatrician on call assessed the neonatal outcome immediately after delivery until discharge. Infants in need of close monitoring were transferred to the neonatal intensive care unit (NICU), or intermediate care nursery (ICN). Neonatal outcome; one and 5 minute Apgar scores, birth weight, infant gender, need for resuscitation or intubation, admission to NICU or ICN, neonatal complications, congenital anomalies, and length of hospital stay were compared between the 3 groups. Congenital malformations were divided into minor and major. Major congenital malformations were defined as those malformations that caused major functional disturbance or disability that required medical or surgical intervention. Mothers and neonates were followed-up until 3 months postpartum to determine the occurrence of complications. Neonates who had birth trauma and congenital anomalies were followed up for at least one-year post discharge.

Statistical comparisons were performed with descriptive techniques. Data were analyzed by means of analysis of variance for continuous variables, followed by least significant difference post hoc procedure to

compare the mean differences between groups. Fisher's exact and chi-square tests were used for categorical data as appropriate. Two-tailed tests were used, and a $p<0.05$ was considered statistically significant.

A total of 46,508 live births were accrued during the 5-year study period. Of these, 32 births (0.07%) were to 31 women with IBD. Women in group 1 had 4 births and women in group 2 had 28 births with one set of twins. Both groups (1 and 2) were matched with 106 births to normal women in group 3 during the same study period and were available for analyses. There were no statistical significant differences between the 3 groups of patients' regarding age, height, weight, parity, mean gestational age at delivery, medical disease during pregnancy, and previous history of a cesarean delivery. There was significantly more blood loss and more days needed for hospital stay in group 3 compared to group 2 (p=0.03, 95% CI: 11.1-206, and p=0.008, 95% CI: 0.2-1.3) (**Table 1**). There was no significant difference in pregnancy complications (gestational diabetes, hypothyroidism, and pregnancy induced hypertension) between the 3 groups. There were no statistical significant differences between the 3 groups in the total length of labor (first, second, and third stages), oxytocin augmentation, labor analgesia utilized, and the need for blood transfusion. There were more women needing induction of labor in group 1 than in groups 2 and 3, p=0.002 (**Table 1**). There were no statistical significant differences for the instrumental vaginal deliveries among the 3 groups (**Table 1**). A total of 38 cesarean deliveries (27.7%) occurred among the 3 groups. Two cesarean deliveries out of 31 women occurred in groups 1 and 2, and 36/106 cesarean deliveries occurred in the control group (**Table 1**). There was significantly more cesarean deliveries needed for the control group, 34% versus 6.5% for groups 1 and 2, p=0.001, 95% CI: 1.8-68.1 (**Table 1**). There were 11/27 women (40.7%) in group 2 who had exacerbation during pregnancy, and 5/27 women (18.5%) had exacerbation in the postpartum period. No women in group 1 had exacerbation during pregnancy nor postpartum. There were no statistical significant differences in the mean birth weight, fetal gender, one and 5 minute Apgar scores, neonates needing resuscitation, and admission to NICU, preterm delivery, and mean hospital stay between the 3 groups. Congenital abnormalities were found in 1/31 pregnancies (3.2%) in the IBD groups, and in 5/106 pregnancies (4.7%) in group 3. This difference (3.2% versus 4.7%) was not statistically significant. There were no cases of stillbirth or neonatal deaths reported in all groups.

Table 1 - Characteristics of labor and mode of delivery for patients in all groups.

Characteristics	Group 1 (n=4)	Group 2 (n=27)	Group 3 (n=106)	*P*-value
		(%)		
Delivery				
Spontaneous	0	23 (85.2)	87 (82.1)	0.002
Induced	4 (100)	4 (14.8)	19 (17.9)	
Women needing oxytocin augmentation	2 (50)	13 (48.1)	29 (27.4)	0.6
Vaginal delivery				
SVD	3 (75)	25 (92.6)	68 (64.2)	0.004
Forceps / vacuum	0	1 (3.7)	2 (1.9)	0.7
Cesarean delivery				
Elective	1 (25)	0	18 (17.0)	0.001
Emergency	0	1 (3.7)	18 (17.0)	
Total blood loss, ml	275 ± 350	182 ± 132	290 ± 243	0.03
Hospital stay, days	2.3 ± 2.5	1.4 ± 0.6	2.1 ± 1.4	0.008

Values are expressed as means ± standard deviation.
SVD - spontaneous vaginal delivery

Crohn's disease and ulcerative colitis are chronic non-curable diseases, which often affect women of childbearing age. Several reports have discussed the impact of Crohn's disease and ulcerative colitis on pregnancy and vice versa.[1-4] One would expect deleterious outcomes on the maternal and fetal growth and devolvement. In our study, 40% of the pregnant women had exacerbation during pregnancy. This is in agreement with previous reported data that approximately one-third of patients will relapse during pregnancy when conception occurs during a period of remission.[1,5] Our study did not show any maternal complication despite exacerbation during pregnancy and postpartum. Well-controlled medical management could explain this. Furthermore, none of our patients required any surgical interventions or resections during pregnancy. Our results are supported by findings that pregnant patients with Crohn's disease have no significantly increased risk of developing stenosis compared to non-pregnant women.[5] It is crucial to maintain women in remission during the 9 months pregnancy to prevent premature and small for dates children. However, in our study we had no significant differences in gestational age at delivery and the neonatal birth weights between the 3 groups despite exacerbations occurring between 22-36 weeks' gestation. This could be explained by the small number of patients with IBD, and the intensive collaboration between the obstetrician and the gastroenterologist. The mode of delivery in women with IBD should be dictated by obstetric necessity and indication. Standard practice is vaginal delivery for women with quiescent disease, and cesarean delivery for perianal disease. In this study, we found that most patients with Crohn's disease and ulcerative colitis (93.5%) had vaginal

delivery with only 6.5% needing cesarean delivery. This was significantly lower than the control group (34%). All patients with Crohn's disease and ulcerative colitis in our study took 5-ASA and corticosteroids at the time of conception and during pregnancy as they are considered safe in pregnancy (FDA category B and C) and to the breast-feeding mothers. The number of birth defects reported in our study was low (3.2%) and comparable to the normal controls (4.7%). This could be attributed to patients' nutritional status being well monitored and any nutritional deficiencies were corrected before pregnancy, in addition to intensive monitoring of the medical therapy during pregnancy. This data are in agreement with a meta-analysis published in 2007.[4]

The limitation of this study is the retrospective nature and the small number of women with IBD.

In conclusion, this study supports that women with IBD can be reassured that they are not at increased risk for maternal, obstetrical, and neonatal complications comparable to the general population, provided that the pregnancy is planned during a period of remission. A multidisciplinary approach by an obstetrician and a gastroenterologist should be provided for successful pregnancy and delivery. Patients should be advised to continue medical therapy during pregnancy and postpartum.

Received 26th June 2010. Accepted 16th August 2010.

From the Department of Obstetrics and Gynecology, Riyadh Military Hospital, Riyadh, Kingdom of Saudi Arabia. Address correspondence and reprints request to: Dr. Ahmed Saleh, Department of Obstetrics and Gynecology, King Fahad Medical City (KFMC), PO Box 1011, Riyadh 11431, Kingdom of Saudi Arabia. Tel. +966 (1) 2889999 Ext. 27022. Fax. +966 (1) 2053813. E-mail: drsaleh99@ yahoo.com

References

1. Riis L, Vind I, Politi P, Wolters F, Vermeire S, Tsianos E, et al. Does pregnancy change the disease course? A study in a European cohort of patients with inflammatory bowel disease. ***Am J Gastroenterol*** 2006; 101: 1539-1545.
2. Dominitz JA, Young JC, Boyko EJ. Outcomes of infants born to mothers with inflammatory bowel disease: a population-based cohort study. ***Am J Gastroenterol*** 2002; 97: 641-648.
3. Nørgård B, Puho E, Pedersen L, Czeizel AE, Sørensen HT. Risk of congenital abnormalities in children born to women with ulcerative colitis: a population-based, case-control study. ***Am J Gastroenterol*** 2003; 98: 2006-2010.
4. Cornish J, Tan E, Teare J, Teoh TG, Rai R, Clark SK, et al. A meta-analysis on the influence of inflammatory bowel disease on pregnancy. ***Gut*** 2007; 56: 830-837.
5. Bortoli A, Saibeni S, Tatarella M, Prada A, Beretta L, Rivolta R, et al. Pregnancy before and after the diagnosis of inflammatory bowel diseases: retrospective case-control study. ***J Gastroenterol Hepatol*** 2007; 22: 542-549.

Related topics

Tzvetanov PG. Hypokalemia-associated catastrophic rhabdomyolysis in ulcerative colitis. ***Saudi Med J*** 2009; 30: 1225-1227.

Khawaja AQ, Sawan AS. Inflammatory bowel disease in the Western Saudi Arabia. ***Saudi Med J*** 2009; 30: 537-540.

Jun S, Hua RZ, Lu TJ, Xiang C, Dong XS. Are endoscopic grading and scoring systems in inflammatory bowel disease the same? ***Saudi Med J*** 2008; 29: 1432-1437.