Obstetric Characteristics in Women with Congenital Uterine Anomalies who Gave a Live Birth

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OBJECTIVE: We retrospectively analyzed previous maternal obstetric characteristics as well as obstetric characteristics regarding the current pregnancy in thirty three consecutive pregnant patients with congenital uterine anomalies (CUA) who gave birth to a live baby at Hacettepe University Faculty of Medicine, Department of Obstetrics and Gynecology between 2005 and 2013.

STUDY DESIGN: Descriptive statistics were used to describe previous maternal obstetric characteristics as well as the outcome of the successful pregnancy among different types of CUA. According to the severity of the CUA, we additionally grouped the sample into two; as minor and major mullerian fusion defect groups (mFD and MFD). We compared obstetric characteristics between these groups.

RESULTS: We identified 33 patients with CUA. Among these; 14 (42,4%) were identified as septate; 6 (%18,2) as bicornuate, 7 (%21,2) as arcuate, 4 (%12,1) as didelphic, and 2 (%6,1) as unicornuate uterus. In 32 subjects the delivery procedure was caesarean section. The mFD and MFD groups were not statistically different in terms of maternal gravida, parity, dilatation and curettage (D&C) and abortion history. Besides, the two groups were similar in terms of gestational week of birth, birth weight and type of fetal presentation.

CONCLUSION: Previous studies emphasize that the type of mullerian anomaly is one of the determinants of pregnancy outcome in women with CUA. However, we show that, this is not the case in women with CUA who gave birth to a live baby. Our results suggest that, type of the mullerian anomaly - if the anomaly allows a live birth - may lose its' predictive value on negative obstetric consequences.

Key Words: Congenital uterine anomalies, Pregnancy, Delivery

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Introduction

Congenital uterine anomalies (CUA) stem from abnormal development or fusion of the Mullerian ducts, related to several genetic mutations during fetal life.[1] In a recent review that identified 94 observational studies comprising 89.861 women, the prevalence of uterine anomalies was reported to be 5.5% [95% confidence interval (CI), 3.5-8.5] in the unselected population, 8.0% (95% CI, 5.3-12) in infertile women, 13.3% in those with a history of miscarriage and 24.5% (95% CI, 18.3-32.8) in those with miscarriage and infertility.[2] Previous studies emphasize that CUA are associated with an increased risk of miscarriage, preterm delivery and adverse fetal outcomes.[3,4] However this may not be the case for all types of CUA: While unification defects (i.e; bicornuate, unicornuate and didelphic uteri) are consistently associated with infertility and miscarriage, the prevalence of arcuate uteri –these anomalies are the most prevalent CUA- was found similar in reproductive versus infertile women or in women with a history of miscarriage.[5] Moreover, CUA are also associated with several obstetric problems and adverse pregnancy outcomes. A recent cohort study reported that the presence of any CUA was associated with higher rates of preterm birth less than 34 weeks [adjusted odds ratio (OR), 7.4; 95% CI, 4.8-11.4], preterm birth less than 37 weeks (OR, 5.9; 95% CI, 4.3-8.1), primary non-breech cesarean delivery (OR, 2.6; 95% CI, 1.7-4.0), preterm premature rupture of membranes (OR, 3.2; 95% CI, 1.8-5.6), and breech presentation (OR, 8.6;95% CI, 6.2-12.0).[6]

Congenital uterine anomalies range from mild problems such as a slight midline septum and cavity indentation that is seen in arcuate uteri, to complete failures of fusion leading to two separate uteri which is the case in uterine didelphys. However, most studies compare pregnancy outcomes between patients with a normal uterus to all patients with a uterine anomaly, regardless of type.[7] Based on the current literature, it would be difficult to estimate the risk of adverse pregnancy outcomes in a patient with a specific uterine anomaly as it is

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unknown how the type of uterine anomaly affects the risk compared to other types. In addition to that, examining previous obstetric features in women with CUA who gave a live birth may especially be informative to predict the risk of negative obstetric consequences in following pregnancies.

Material and Method

We retrospectively analyzed previous maternal obstetric characteristics as well as obstetric characteristics regarding the current pregnancy in thirty three consecutive pregnant patients with congenital uterine anomalies (CUA) who gave birth to a live baby at Hacettepe University Medical Faculty, Department of Obstetrics and Gynecology between 2005 and 2013. We grouped uterine anomalies into two groups; those with a major fusion defect (MFD) that essentially only have a unilateral horn for pregnancy, including unicornuate, bicornuate and didelphys, and those with a minor fusion defect (mFD), where the cavity is only partially altered, such as arcuate and septate. We then compared MFD to mFD in terms of maternal obstetric characteristics and pregnancy outcome. Mann-Whitney U test was used to compare continuous variables and Chi-square test was used to compare dichotomic variables. The data was collected from electronic patient data and hospital database.

Results

This study consisted of 33 patients with CUA. Out of these 33 patients, 14 (42,4%) were uterus septum, 6 (%18,2) were uterus bicornus, 7 (%21,2) were uterus arquatus, 4 (%12,1) were uterus didelphius, and 2 (%6,1) were uterus unicornus. In sum, we identified 12 (36.4%) cases with a MFD and 21 (63.6%) cases with a mFD.

The distribution of maternal characteristics regarding previous pregnancies over uterine anomalies are presented in Table 1 and the distribution of characteristics regarding the present pregnancy over uterine anomalies are presented in Table 2.

As it is visible in Table 1, we did not detect a significant difference between the two groups in terms of maternal age

Table 1: The distribution of maternal characteristics regarding previous pregnancies over uterine anomalies

Uterine anomaly	Age (years) (mean±SD)	Gravidity (mean±SD)Ω	Parity (mean±SD)Ω	Dilatation and Curetage history (mean±SD)Ω	Abortion history (mean±SD)Ω
Septate (n=14)	30.69±4.42	3.43±2.87	0.64±0.92	-	1.14±1.70
Arquate (n=7)	28.0±5.80	2.29±1.70	0.71±1.23	0.14±0.38	0.43±0.53
Bicornuate (n=6)	29.50±4.32	2.71±1.79	0.86±0.90	0.29±0.48	0.86±0.90
Unicornuate (n=2)	27.50±9.19	1,50±0.70	-	-	0.50±0.70
Didelphys (n=4)	27.0±1.73	1.75±1.25	0.25±0.50	0.25±0.50	0.50±1.0
mFD (n=21)	29.79±5.10	3.05±2.51	1.08±1.03	0.17±0.41	1.56±1.23
MFD (n=12)	28.45±4.45	2.64±1.28	0.78±0.83	0.60±5.48	1.00±0.86
	Z=-0.80, p=0.42	Z=-0.33, p=0.74	Z=-0.60, p=0.55	Z=-1.41, p=0.16	Z=-0.96, p=0.34

SD=Standard deviation, Ω=Data are presented as the total number of past events per subject Mann-Whitney U Test was used for statistical analyses.

Table 2: The distribution of characteristics regarding the present pregnancy over uterine anomalies

Uterine anomaly	Gestational age (weeks)(mean±SD)	Birth weight (kg)(mean±SD)	Delivery procedure (NVD/CS)	Fetal presentation (vertex/breech/ ransverse/other)
Septate (n=14)	34.62±4.25	2555.3±1047.8	1/13	7/3/2/1
Arquate (n=7)	35.43±4.57	2767.1±1205.5	-/7	5/2/-/-
Bicornuate (n=6)	36.33±1.36	2660.0±358.9	-/7	3/3/-/-
Unicornuate (n=2)	37.00±1.41	3065.0±685.9	-/2	2/-/-/-
Didelphys (n=4)	35.50±1.73	3052.0±650.6	-/4	3/1/-/-
mFD (n=21)	34.90±4.27	2629.5±1078.4	1/20	12/5/2/2
MFD (n=12)	36.17±1.47	2849.2±505.3	-/13	8/4/0/0
	Z=-0.119, p=0.90	Z=-0.66, p=0.51	-	X=2.04, p=0.56

NVD: Normal vaginal delivery, CS: Cesarean section

(29.7±5.10 and 28.45±4.4 for mFD and MFD groups respectively; Z=-0.80, p=0.42), maternal gravidity history (3.05±2.51 and 2.64±1.28 for mFD and MFD groups respectively; Z=-0.33, p=0.74), maternal parity history (1.08±1.03 and 0.78±0.83 for mFD and MFD groups respectively; Z=-0.60, p=0.55), maternal dilatation and curettage history (0.17±0.41 and 0.60±5.48 for mFD and MFD groups respectively; Z=-1.41, p=0.16) and maternal abortion history (1.56±1.23 and 1.00±0.86 for mFD and MFD groups respectively; Z=-0.96, p=0.34).

Discussion

Congenital anomalies of the uterus are estimated to occur in 2-4% of women with normal reproductive outcomes.[8] However, for a long time, we known that CUA are raised several obstetrical problems such as recurrent miscarriage, preterm labor, preterm premature rupture of membrane, non-vertex presentation, high cesarean rates.[2]

Current medical literature emphasizes that bicornuate uterus has higher rates of SPTB compared with other CUA types.[11-12] Our results were consistent with previous study. In this study, we found that gestational week at delivery in pregnant woman who had bicornuate uterus is the lowest gestational week compared with arcuate uterus, uterus didelphys, and unicornuate uterus (Table 2). Similarly, previous studies reveal that major fusion anomalies, compared to minor anomalies are associated with an increased risk of adverse outcomes during pregnancy and increased risk of perinatal problems.[9-10] However in women with CUA who gave a live birth we found that those rates are similar between major and minor anomaly groups (Table 2).

Ninety-six percent of all births are non-vertex presentation and we know that CUA associated with fetal presentation abnormalities. This study showed that non vertex presentation rates (13/33) at time of delivery are higher than vertex presentation. At the same time, there was no statistically significant difference between MFD and mFD. Similarly, between these two groups did not differ in terms of infant birth weight.

Therefore, we suggest that, type of the mullerian anomaly -if the anomaly allows a live birth-may lose its' predictive value on negative obstetric consequences. There might be other factors responsible for the differential pregnancy outcomes between major and minor fusion anomalies that were detected in previous research.

Konjenital Uterus Anomalisi Olup Canlı Doğum Yapan Annelerde Obstetrik Özellikler

AMAÇ: 2005 ve 2013 yılları arasında Hacettepe Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Ana Bilim Dalı'na gebelik nedeniyle başvuran, yapılan incelemelerinde konjenital uterus anomalisi (KUA) olduğu tespit edilen ve canlı doğum yapan 33 hastada, uterus anomalisinin tipine göre maternal öyküye ve doğum sonrasına ilişkin obstetrik özelliklerin dağılımını retrospektif olarak araştırdık.

GEREÇ VE YÖNTEM: Konjenital uterus anomalisinin cinsine göre annenin önceki gebeliklerine dair obstetrik özellikleri ve mevcut gebeliğin gidişine ilişkin özellikleri tanımlayıcı istatistiksel yöntemlerle tanımladık. Buna ek olarak, müller kanalı füzyon anomalisinin cinsine göre anomalileri minör ve majör olmak üzere iki gruba (sırasıyla; mFA ve MFA) ayırdık ve bu iki grup arasında obstetrik özellikleri karşılaştırdık.

BULGULAR: KUA tespit edilen ve canlı doğum yapan ardısıra 33 vaka tespit ettik. Bu olguların 14 (%42,4)'ünde septat, 7 (%21.2)'sinde arkuat, 6 (%18.2)'sında bikornuat, 4 (%12,1)'ünde didelfik ve 2 (%6,1)'sinde unikornuat uterus anomalisi olduğunu gözlemledik. 33 olgunun 32'sinde doğum sezaryen ile gerçekleşmişti. Maternal öyküde gravida, parite, dilatasyon ve küretaj ve abortus geçmişi bakımından gruplar arasında istatistiksel bir fark olmadığını gözlemledik. Buna ek olarak, canlı doğuma ilişkin özellikler olan doğum haftası, doğum ağırlığı ve fetal geliş biçimi bakımından da iki grubun benzer olduğunu saptadık.

SONUÇ: Önceki araştırmalar KUA olgularında mülleryen anomalinin tipinin gebeliğin gidişi ve doğuma ilişkin özellikler üzerinde etkili olduğuna işaret etmektedir. Bu çalışmada ise canlı doğum gerçekleştiren annelerde bu özellikler bakımından arada bir fark bulunmamıştır. O halde, mülleryen anomalinin tipi - eğer bu anomali canlı doğum yapmaya izin veriyorsa- olumsuz obstetrik sonuçlar üzerinde belirleyici etkisini yitiriyor olabilir.

Anahtar Kelimeler: Konjenital uterus anomalileri, Doğum, Gebelik

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