Histological pattern of chorionic villi is patients suffering from spontaneous miscarriage

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ABSTRACT

BACKGROUND: Chorionic villi develops from chorion and enter the endometrium in form of microscopic finger like projections and contain capillaries for blood flow and transfer of nutrients from mother to the fetus. The objective of this study was to see the histological pattern of chorionic villi in spontaneous miscarriage patients.

OBJECTIVE: To determine Histological pattern of chorionic villi is patients suffering from spontaneous miscarriage

MATERIALS AND METHODS: This cross sectional descriptive study was conducted in Pathology department, Bannu Medical College Bannu Khyber Pakhtunkhwa. Pakistan. The duration was five years from January 2012 to December 2016. A total of 64 specimen of spontaneous miscarriage of endometrial curettage specimen were analysed. All spontaneous miscarriage endometrial specimen of any age were included in the study, exclusion criteria was autolysed, insufficient specimen and endometrium of induced miscarriage. Blocks were prepared, sections taken, slides were prepared, dried ,stained and mounted and reported by histopathologist. The data were analysed in Statistical Package for Social Sciences (SPSS) version 16 for frequencies with percentages and mean with standered deviation.

RESULTS: In this study the mean age was 23.65 (16 to 50 years). The common age group of spontaneous was 16-25 years followed by 26-35 years. Amongst the 64 specimen 11(17.18%) cases were normal chorionic villi, 19(29.68%) showed hydropic changes, 15(23.42%) cases showed fibrinoid degeneration, 11 (17.18%) cases showed hyalinization, 6 (9.37%) cases showed molar changes and 01 (1.56%) case showed choriocarcinoma.

CONCLUSION: Histologic examination of endometrium is a reliable method of diagnosing routine spontaneous miscarriage cases, also may of help in some cases in identification of the cause of miscarriage.

***Key Words**: Spontaneous miscarriage, Chorionic villi, Hydropic change of chorionic villi, Hydatiform mole, Pregnancy.*

This article may be cited as: Sajjad M, Khattak TS, Asif M, Din UI. Histological patteren of chorionic villi in patients suffering from spontaneous abortion. JSMC 2017;7(2):86-88

INTRODUCTION:

Spontaneus miscarriage are quite common and is the commonest complication of pregnancy. About 15% of pregnancies terminate in spontaneous miscarriage and more than 80% occur in first 12 weeks of gestation, however using sensitive chorionic gonadotrophins assays this percentage rises by an additional 22% in otherwise healthy mothers[1-5]. World Health Organization (WHO) defines spontaneous miscarriage as loss of products of conception before 20 weeks of gestation. Miscarriage which occurs before 12 weeks of pregnancy is called as early miscarriage where as those occurring from 12 to 20 weeks of gestation is called late miscarriage Clinically miscarriage is distressing complication with many etiological factors both fetal and maternal abnormalities, like genetics in form of ploidy and tranlocation in about 50% of miscarriage, maternal factors are hormonal imbalance uncontrolled diabetes, endocrine abnormalties as well as uterine malformation, leiomyoma, polyps, infections etc[6-9]. The types of spontaneous miscarriage are threatened, incomplete, inevitable, complete, missed and septic miscarriages and is the most common cause of vaginal bleeding in the first trimester (first 12 weeks) of pregnancy[10-13].

Prevention of spontaneous miscarriage is rarely possible with complete bed rest, avoiding stressful life, drugs, alcohol consumption, infectious diseases control etc. The common symptoms of miscarriage are vaginal bleeding this may vary from spotting to brownish discharge to heavy bleeding[15].

Chorionic villi are essential elements of pregnancy which develops from chorion and provide maximum contact area with maternal blood[14].

The aim of this study was to see the various pattern of histopathological changes in chorionic villi in cases of spontaneous abortion.

MATERIALS AND METHODS.

This cross sectional descriptive study was carried out in Pathology Department Bannu Medical Colllege Bannu KPK. Pakistan. The study period was five years, from January 2012 to

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Received: July 12, 2017 Accepted: October 23, 2017

December 2016. A total of 64 endometrial specimen of spontaneous miscarriage were included. The inclusion criteria was all endometrial specimen of spontaneous miscarriage, exclusion criteria was insufficient and autolysed specimen as well as induced abortion. All the specimen were fixed over night in 10% buffered formalsaline, processed in ascending grades of ethanol, xyelene and paraffin wax. A minimum of one and maximum of two blocks were prepared. Two to four slides of 5 micron thick sections were taken. The slides were stained with Hematoxylin & Eosin (H&E), mounted with Distyrene Plasticizer and Xylene (DPX) and reported by single histopathologist. The data was analysed in Statistical Package for Social Sciences (SPSS) version 16 for frequencies with percentages and mean with standered deviation.

RESULTS:

A total of 64 endometrial specimen of spontaneous miscarriage were analysed. The mean age was of 23.65 years and age range from 16 to 50 years. The common age group of spontaneous abortion was 16-25 years followed by 26-35 years. (Table:I). Amongst the 64 specimen 19(29.68%) showed hydropic changes, 15(23.42%) cases show fibrinoid degeneration, 12 (18.75%) cases show hyalinization, 11(17.18%) cases showed normal chorionic villi, 6 (9.37%) cases showed molar changes and 01 (1.56%) case showed choriocarcinoma. (Table:II.)

DISCUSSION:

Spontaneous miscarriage is one of the commonest obstetrical problem with multiple etiological problems. This results histologically in form of various lesions of chorionic villi. Normally chorionic villi are working as functional unit of placenta to provide nourishment and excrete the waste of the fetus. The histological structure of chorionic villi varies with the gestational age of fetus[16].

In this study the age range was from 16 to 50 years, mean age was of 23.65 years and the commonest age group of spontaneous miscarriage was 16-25 years 65.62% followed by 26-35 years 26.56%. In study conducted by Alsibiani et al[17] in 2014 in Saudi Arabia the age range was from 14-48 years with mean age of 33.7±7.5 years. Another study conducted by Makaju et al[18] in 2015 in Nepal the mean age 25.1±5.6 years and the commonest age group was 21-30 years (62.2%) followed by ≤20 years (24.3%). Still another study conducted by Shetty et al[19] in 2016 in India the age range was from 18-37 years with common age group of 20-30 years with 77.3% cases. This variation in age range and groups may be due to differences in marriages in different age groups in various countries.

In our study the abnormalities noted in order of frequency were hydropic changes 19(29.68%) followed by fibrinoid degeneration 15(23.47%), hyalinization in 12 (18.75%), molar changes in 06 (9.37%) and 01 (1.56%) cases of choriocarcinoma. In 11(17.18%) cases no apparent histological abnormality in chorionic villi were detected.

In a study conducted by Makaju et al[18] (n=73) the abnormalities were detected in 36.99% cases amongst which hydropic changes were seen in 9.9%, followed by fibrinoid degeneration in 4.5%, molar changes in 3.6% cases, where as in 63.01%

Table-I: Age distribution of patients suffering from spontaneous miscarriage(n=64).

Age group in years	No of chorionic villi cases	Percentages %
16-25	42	65.62
26-35	17	26.56
36-50	05	7.81

Table-II: Frequency and percentage of histological variants of chorionic villi (n=64).

Type of chorionic villi lesion	Number of cases	Percentages %
Hydropic change	**19**	**29.68**
Fibrinoid degeneration	15	23.42
Hyalinization	12	18.75
Normal chorionic villi	11	17.18
Molar changes	06	9.37
Choriocarcinoma	01	1.56

cases, no apparent histological changes were detected which is quite higher than the present study. The reason for high number of normal chorionic villi in this study was inclusion of all miscarriages including induced abortion. Another study conducted by Haque et al[20] in 2004 in Pakistan show 97% cases with abnormalities in choionic villi and only 3% cases with normal chorionic villi. Fibrosis was seen in 83% cases followed by fibrinoid degeneration in 47% cases and hydropic changes were seen in 33% of cases. These gross variation may be due to differences in subjective interpretation of chorionic villi.

A study conducted by Shetty et al[19] show hydropic changes in 32%, followed by fibrosis in 21.3% cases. Again differences may be due to subjective interpretation.

In cases of spontaneous miscarriage with abnormal placental development additional ancillary techniques are required in form of Karyotyping, immunohistochemical and serological markers to rule out genetics abnormalities as well as vascular abnormalities and neoplastic proliferation. The associated markers are vascular endothelial growth factor (VEGF), vascular endothelial growth factor receptor (VEGFR), Beta Human Chorionic Gonadotrophin (HCG), serological screening for toxoplasma, rubella, cytomegalovirus and herpes simplex virus (TORCH) Profile as well as blood sugar and HBA1c level to rule out different diseases

In this study we are able to achieve the following by conventional tissues processing of H&E staining.

1. Confirmation of pregnancy in aborted specimen.
2. Diagnosis of gestational trophblastic diseases associated with raised serum beta HCG level.
3. Hydropic changes as well as Inflammation.

Conclusion: Histologic examination of endometrium is a reliable method of diagnosing routine spontaneous miscarriage cases, also may of help in some cases in identification of the cause of miscarriage.

Limitations: This study has the limitation of not correctly diagnosing abnormalities associated with genetic as well as vascular abnormalities as we are lacking karyotyping and vascular immunohistochemical markers.

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