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Original Article

Histopathology of cadaver uterus in suicides in relation to premenstrual syndrome.

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ABSTRACT

The present study was aimed to evaluate the effect of premenstrual tension in women suicide by histopathology of cadaver uterus. The death by suicide is complex problem which involves multiple factors. Female suicides constituted 46% of the total suicides. The predominant factor was found to be chronic illness, harassment by relatives, depression and financial problems. Suicidal behavior was also found to be influenced by various phases of menstrual cycle. In the present study to the role of premenstrual tension in suicide, autopsies of women in the fertile age group were taken for study and Histopathological examination was also conducted in all autopsies. It was found that premenstrual tension was not the significant risk factor for the suicide in women and neither it was the cause for attempting suicide. Hence it can be concluded that evaluation of further etiological factors and incidence of death by suicide at a particular region requires to understand the cross section of the society, with a particular reference to its socioeconomic status and psychiatric problems and civilizations.

1. Introduction

Premenstrual syndrome (PMS) is not a condition to be laughed at or considered weird. Millions of menstruating women are suffering from pain, living with uncontrollable mood swings and trying to cope. Suicide attempts are more frequent in women than in men. In a study conducted on 96 females suffering from PMS Singh et al [1] observed marked behavioral changes like depression, aggression, irritability, mood swings etc. In some females these behavioral changes affect to such as extent that they act uncharacteristically and commit minor to major crimes which can turn into unlawful behaviors. According to WHO estimates [2] in the year 2000, approximately one million people died from suicide, and 10 to 20 times more people attempted suicide worldwide. On an average this represents one death every 40 seconds and one attempt every 3seconds. In all countries, suicide is now one of the three leading causes of death among people aged 15-34 years.

On the other hand India is vast country with diverse religions and varying standards of civilization with complex social customs and faiths with urban and rural population with regional and zonal thinking and the city of Hyderabad is a congregation of all religions and faiths and a mixture of socio economic patterns, can be considered a right place to evaluate the problem of suicide. As per the NCRB report[3], in India the overall male:female ratio of suicide victims for the year 2008 was 64:36 as compared to 65:35 in the year 2007 with increased record rate of 19.4% during the decade (1998–2008).

According to Friedman & Jaffe [4] the relationship between behavioral changes and premenstrual changes is complex and multidirectional. PMS is the psycho-neuro-endocrinal disorder of unknown etiology, often noticed just prior to menstruation. The

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menstrual cycle has continued to be a focus of considerable clinical concern, though less so in the scientific literature. Hippocrates also observed references to suicidal behavior and menstrual functions [5]. Saunders and Hawton [5] presented a systematic review of the known data regarding the possible associations between phases of the menstrual cycle and suicidal behavior. They presented the literature on suicide, attempted suicide, suicidal ideation, and deliberate self-harm (excludes suicidal intent).

The present study was designed more specifically to highlight the role of various menstrual phases and their effect on the suicidal tendencies in women.

2. Material Methods

Autopsies referred from Osmania General Hospital and other hospitals of the Hyderabad city, from the jurisdictional area of police stations covering city and also from adjoining areas of the Ranga Reddy district were conducted in the mortuary of Osmania General Hospital, Hyderabad, Andhra Pradesh, India. The Institute conducts the medico legal autopsies, including suicide, which is determined by forensic records, autopsy and interviews with relatives, suicide notes, etc. Enough precautions were taken to exclude cases where a doubt or suspicion about the nature of death was noted. Only determined suicides were used. Finally study was limited to total number of 97 cases (n = 97) of girls and women in the age group 15–45 years from 2008, to 2010. A proforma (Fig:1) was prepared for each case, labeled separately and allotted a number for collecting the data related to suicide. Detailed autopsies were performed including collection of information from the relatives of the deceased, investigating officers, inquest reports and finally postmortem findings. Histopathological examination was also conducted in all autopsies, that is, microscopic collection of tissue through biopsy in order to determine the stage of menstrual cycle.

The uterus specimens were collected during autopsy, their measurements were taken, gross longitudinal sections were given in the midline, findings were noted and subsequently specimens were transferred to freshly prepared buffered formalin solution

Figure 2: Gross specimen of uterus and adnexae with sectioned showing endometrium along with endometrial poly.

Histopathology

In the present study, the uterus specimens were collected from the body while doing autopsy, and they were placed in fixing solutions of 10% formalin and the sealed bottle were labeled with concerned date of postmortem number, name, age, police station and taken to department of pathology for histopathology examination.

Block of average uterine tissue 4mm was fixed in 20 times its volume of buffered neutral formalin for about 8 hrs at room temperature. Complete fixation requires 12 to 24 hours at room temperature. Thin sections of endometrium along with myometrium were taken from the uterus and kept in capsules for processing. Tissue having been completely dehydrated and cleared were impregnated with paraffin wax by immersion in a solution of molten wax baths. This was achieved with agitating in an automatic tissue processor. Following impregnation, tissues were embedded in a wax block that enables them to be cut in to thin sections measuring 2 to 8 microns by microtome. After embedding, the capsules were placed in a basin of cold water or in the refrigerator to cool. At least 2mm wax should cover the tissue block. A small paper tag bearing the tissue number was then fixed to the block with the aid of a hot spatula. Cut tissues were then transferred on to glass slides and stained with Haematoxylin and eosin stain according to the method described in Theory and Practice of Histological Techniques by Bancroft and Gamble [6]. Later on cover slips were placed on the stained tissues for examination and reporting under microscope.

3. Results:

Figure:2 depicts the results of the present study showing various stages of menstruation. Only 8 cases out of 50 cases (16%) showed late secretory phase which is the indication of premenstrual phase and there was an element of underlying depression. The rest of the 42 victims (84%) died in the proliferative, early secretory phase; menstrual phase.

Figure:3 Percentage of no.of cases showing endometrial changes.

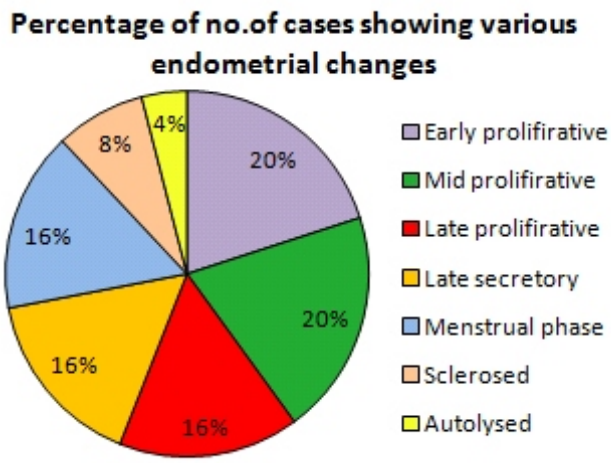


Figure:1 Proforma for histopathology of cadaver uterus in suicidal deaths

PROFORMA

HISTOPATHOLOGY OF CADAVER UTERUS IN SUICIDAL DEATHS

Sl. No

I. Postmortem Examination No: Crime No: Police Station:

II. Personal Details:
- a) Name — Age/Sex
- b) Married/Unmarried — Marital Life
- c) Occupation — Particulars of Husband & Children
- d) Socio economic background
- e) Educational qualifications
- f) Annual Family income

III. Brief History in relation to death
- a) As per inquest
- b) As per relatives

IV) History in relation to menstrual cycles

V) Apparent cause of death

VI) Postmortem Examination findings
- a) General findings
- b) Local/specific findings

VII) Any discrepancy between inquest and report

VIII) Pathological findings

Figure:3 Photograph showing the late secretory phase

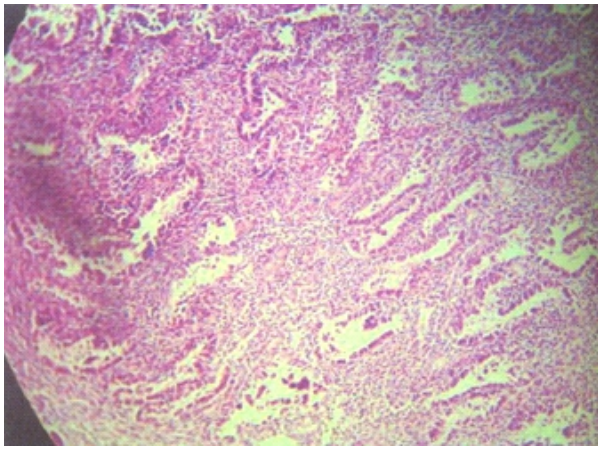
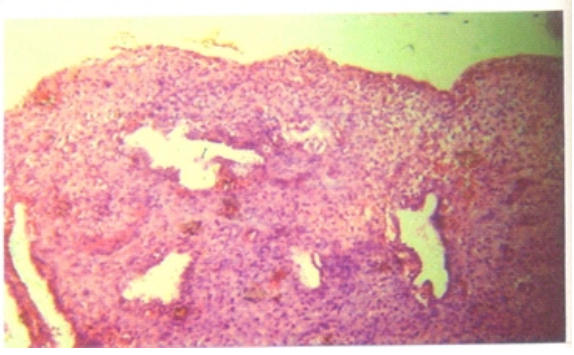


Figure:4 Photograph showing the late secretory phase and congested blood vessels are also present.



According to Afzali et al [7] the high rate of suicide in women has drawn attention of many researchers to different phases of menstrual cycle as a biological factor and some of the mental disorders associated with menstrual phases including depression and psychotic symptoms after delivery and before menstruation. Although the studies of completed suicides can accurately estimate the phase of the menstrual cycle by endometrial histology, they lack reliable psychiatric assessments[8,9]. Thompson et al[10] did not find a significant difference between agreement in the menstrual cycle phases, so they concluded that the report of psychotic women was "extremely accurate" or as accurate as the report of nonpsychotic women. McKinon et al[8] pointed out a relationship between completed suicides and luteal phase; however, Vanezis[9] did not find any relationship between menstrual cycle and completed suicides. Baca-Garcia E etal[11] also did not find a significant association between menstrual cycle phase and antecedents of premenstrual syndrome.

A total of 3872 autopsies were conducted at the mortuary of Osmania General Hospital in the year 2010, out of which 1781 i.e 46% cases were suicidal in nature. Among 1781 suicide cases, female suicidal deaths accounted for 685. Only 97 cases out of 685 cases were selected for the present study. These cases were specially selected after confirming that the manner of death is absolutely suicide. Many of the cases brought to the mortuary were in decomposed state and the uterus was softened due to delay in postmortem examination. The reasons for delayed postmortems were Mandal Revenue Officer inquest for dowry deaths within 7 years of marriage and deaths occurring at far off places taking long time for transportation of the deceased for autopsy resulting in N=50.

Tables

Table:1 Histopathology details of cadaver uterus

Age (years)	n	Size			Weight (gm)	Thickness	
		Length (cm)	Breadth (cm)	Thickness (cm)		Endometrium (mm)	Myomertrium (cm)
11-20	8	5.4±0.7	4.6±0.5	3±0	41.2±8.5	1.75±0.5	1.75±0.5
21-30	30	7.5±1.5	5.1±0.8	4.1±1.3	61.6±18.2	1.8±1.0	2.1±0.7
31-40	6	6.3±0.5	4.7±0.5	3.3±0.5	50.0±26.4	2.3±1.1	2.1±0.3
41-50	6	6.0±1.0	4.0±1.7	2.5±1.3	35±2.5	1.3±0.6	2.0±0.0

N=50, Data expressed as Mean ± SD.

4. Discussion

In the present study, out of total suicide cases 38.5% were female victims with the ratio of female to male suicide victims was 1:1.6. The commonest method used by females for committing suicide in Southern Part of India and in countries like Pakistan, Japan, Austria and England is by hanging. But females of Brazil, Geneva and Israel adopted methods like poisoning and fall from height for committing suicide [12]. A total of 50 women were identified as having completed suicide. So the present Study is confirmed only to the fertile age group. The most common age was 15 – 45 years. The commonest method adopted by most of the victims here was by self immolation with fire (39%) followed by consumption of poison(35%), hanging(11%), drowning (9%) and others (6%). and a 13 year old girl who committed suicide by consuming a pesticide was also included in the study.

The most popular explanation given for the suicidal tendency in females is the hormonal variation. 13. Fourestié etal [13] supports the idea that the hypoestrogenic phases of the cycle are associated with suicide attempts. According to Lester [14], the effect of estrogen over dopamine can influence mood in women and therefore influence suicidal behavior. Other possible explanations given were emotional instability linked with premenstrual syndrome[15], the fear of unexpected pregnancy after a delay of menstruation[16] and psychosocial gender factors[17].

It is highlighted by Afzali et al[7] that hormonal changes in different phases of menstrual cycle and particular phases of menstrual cycle cannot be alone taken as a direct cause which can be highly effective in increasing suicide rate in women. In fact, most of the patients in his study committed suicide on impulse and based on decisions without a clear relationship with their menstrual cycle phases. Mann et al[18] reported that Serotoninergic function is also linked to suicidal behavior. Finally, Rubinow et al[19]stated that impulsivity and serotoninergic function change across the menstrual cycle. In addition, serotoninergic function is lower when the levels of gonadal hormones are low, so Baca-García et al[11] hypothesized that impulsive women are more likely to attempt suicide during the cycle phase with the lowest levels of gonadal hormones perimenstrual phase.

Our present study corroborates with the findings of Leenaars et al[20]. where maximum number of suicides occurred during ovulatory or proliferative phases. In two retrospective studies conducted by Baca-García et al[11] they concluded that menses is associated with a significant increase of suicide attempts. The conflicting results may be attributed to differences in the diagnostic criteria for PMS differences, in the severity of PMS and the presence or absence of psychiatric co morbidity.

Limitations

5. Conclusion

Finally in the present study, it can be concluded that premenstrual tension is not the sole cause for committing suicide. Other factors like impulsivity, low serotoninergic activity, depression can also be attributed. Risk factors in fertile age group women are definitely varied, hence a different approach is needed to study the suicides amongst women and also, to professionally counsel them from committing suicides.

Acknowledgments

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