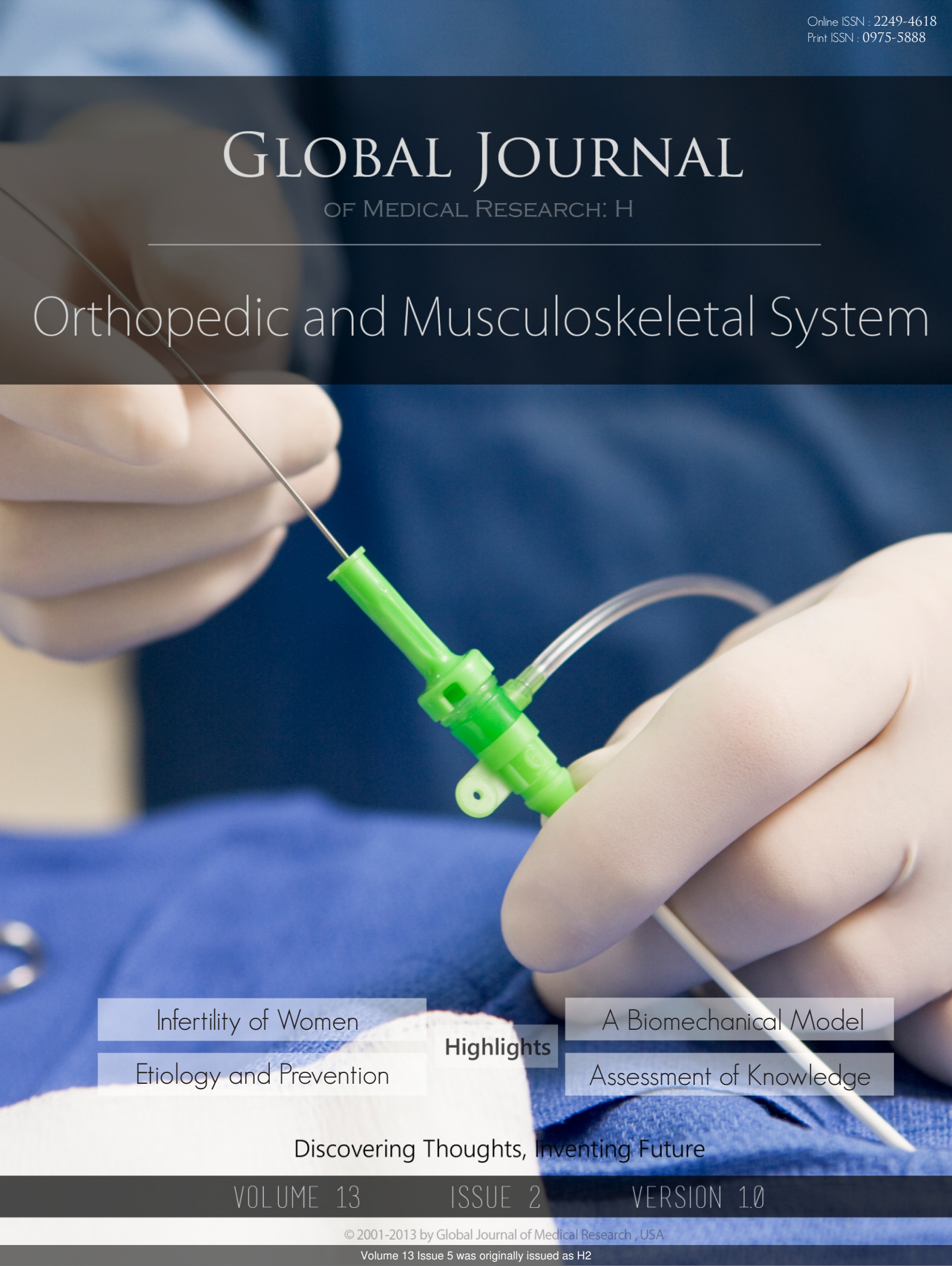
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Infertility of Women
Etiology and Prevention

Highlights

A Biomechanical Model
Assessment of Knowledge

Discovering Thoughts, Inventing Future

VOLUME 13 ISSUE 2 VERSION 1.0

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Oxidative Stress in Primary Infertility of Women

By Majid K. Hussain, Hamza J. Mohammed, Basima S. Al- Ghazali & Mazin Thamir Abdul Hasan

University of Kufa College of Medicine

Abstract - The current study was designed to investigate the changes of oxidative stress (OS) in primary infertility of females. To achieve the intended aim, 84 infertile women of ages 28.66 ± 6.29 years (mean ± SD) and 30 healthy fertile women of ages 30.3± 6.45 years (mean±SD) were enrolled. The levels of malondialdehyde (MDA), catalase (CAT) and glutathione-S-transferase (GST) were determined by spectrophotometric methods. Serum follicule stimulating hormone (FSH) and luteinizing hormone (LH) levels were measured by an enzyme linked fluorescent assay (ELFA). The results indicated a significant ($p<0.001$) increase of MDA concentration and significant ($p<0.001$) decreases of CAT and GST activities in the infertile women when compared with those of the control group. The linear regression analysis demonstrated significant ($r = 0.27, p<0.05$) positive correlation for MDA levels and significant negative correlations for CAT ($r = - 0.24$, $p<0.05$) and GST levels ($r = - 0.26, p<0.05$) with the age of infertile women.

Changes of oxidative stress was observed to be dependent on the body mass index (BMI) and the duration of infertility of the enrolled women. The changes of MDA, CAT and GST levels seem to be independent on etiology of infertility and the menstruation pattern. The2linear regression analysis revealed significant ($r = 0.28$, $p<0.05$) positive correlation for MDA levels with the FSH concentration and significant($r = - 0.29$, $p<0.05$) negative correlation with the LH concentration.CAT exhibited significant ($r = 0.30$, $p<0.05$) positive correlation with the FSH concentration, while GST activity demonstrated significant($r = 0.24$, $p<0.05$) positive correlation with the LH concentration.

These results suggest that oxidative stress is involved in the path ophysiology of primary infertility in females, in particular through the directing of gonadotrophin changes in these patients.

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Oxidative Stress in Primary Infertility of Women

Majid K. Hussain [α], Hamza J. Mohammed [σ], Basima S. Al- Ghazali [ρ] & Mazin Thamir Abdul Hasan[ω]

Abstract - The current study was designed to investigate the changes of oxidative stress (OS) in primary infertility of females. To achieve the intended aim, 84 infertile women of ages 28.66 ± 6.29 years (mean ± SD) and 30 healthy fertile women of ages 30.3± 6.45 years (mean±SD) were enrolled. The levels of malondialdehyde (MDA), catalase (CAT) and glutathione-S-transferase (GST) were determined by spectrophotometric methods. Serum follicule stimulating hormone (FSH) and luteinizing hormone (LH) levels were measured by an enzyme linked fluorescent assay (ELFA).

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I. Introduction

Oxidative stress (OS) is a common condition caused by biological systems in aerobic conditions such that antioxidants cannot scavenge the reactive oxygen species (ROS). This causes an excessive generation of ROS, which damages cells, tissues, and organs (1). Evidence suggests that OS induced by ROS such as superoxide anion ($O2^{\bullet-}$), hydroxyl radicals ($OH^{\bullet}$) and a range of lipid peroxyl radicals produced in vascular cells is involved in the pathogenesis of a wide range of diseases of there productive system such as endometriosis and infection (2).

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OS impacts fertilization and can further induce apoptosis, resulting in embryo fragmentation, implantation failure, or abortion. In the fallopian tubes, OS may induce damaging effects in an embryo. The endometrium, which facilitates embryo implantation and development, can become defective when the female reproductive tract experiences an ROS–antioxidant imbalance (3). OS may hinder the support required for the continuation of a pregnancy by causing luteal regression and insufficient luteal hormone levels (4). Several other known causes of infertility, such as endometriosis, hydrosalpinx, polycystic ovarian disease, unexplained infertility, and recurrent pregnancy loss (RPL) may be attributed to O in the environment (5).3

OS induces infertility in women through a varietyof mechanisms. Ovarian follicles experiencing OS can lead to direct damage to oocytes. Oocytes and spermatozoa can also experience direct damage, which can lead to impaired fertilization due to an environment of OS in the peritoneal cavity. Even when fertilization occurs, apoptosis leading to embryo fragmentation, implantation failure, abortion, or congenital abnormalities in offspring can occur. OS in the fallopian tubes can cause direct adverse effects on the embryo defects in the endometrium, which normally supports the embryo and its development, can arise when there is an ROS antioxidant imbalance in the female reproductive tract (3).ROS-antioxidant imbalance is also implicated in luteal regression and insufficient luteal hormonal support for the continuation of a pregnancy(4). OS has been implicated in many other causes of infertility, such asendo metriosis, hydrosalpinx, polycystic ovarian disease, unexplained infertility, and recurrent pregnancy loss (6).

II. Patients And The Control Groups

A total of eighty four women with primary infertility of age's 18-41years with a mean ± SD 28.66 ±6.29 years attending the fertility centerin the AL-Sadder Teaching Hospital in Najaf city fromOctober2008 to May 2009 were included in the study. To compare the results, thirty healthy age matched (mean ± SD 30.3±6.45 years) females with history of at least one child birth were also enrolled. Subjects suffered from diseases (hypertension, asthma and diabetes mellitus) interfere with the data obtained were excluded.

Disposable syringes and needles were used for blood collection. Venous blood samples, about 10 ml were collected from patients and healthy volunte erson day-2 of their menstrual cycle in tubes. After4allowing

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the blood to clot at room temperature for 15 min, blood samples were centrifuged at 3000 xg for 15 min. Sera were separated and divided into five aliquot samples stored at _17C°, two for determination of the hormonal profile, the three others were used for estimation of oxidatives tress parameters.

III. Determination of Malondialdehyde, Catalase and Glutathione – S – Transferase Levels

The level of malondialdehyde was determined by modified procedure described by Guidet B. and Shah S.V. (7).

Catalase (CAT) activity was determined by the measurement of the decrease in the absorbance due to hydrogen peroxide (H2O2) consumption as described by Aebi H. (8).

GST activity was analyzed by measuring the conjugation of glutathione (GSH) and 1-chloro2, 4dinitrobenzene (CDNB) as asubstrate, as described by Habig WH.et al (9)

IV. Determination of Serum FSH and LH Concentration

VIDAS® FSH and LH are an automated quantitative test for use on the VIDAS instruments for the determination of human folliculestimulating hormone (FSH) and human luteinizing hormone (LH), inhuman serum or plasma using the Enzyme Linked Fluorescent Assay(ELFA) technique.(10)

V. Results

a) Level of Malondialdehyde, Catalase and Glutathione -STransferasein Infertile Women and the Control Group

Malondialdehyde (MDA), catalase (CAT) and glutathione-Stransferasefemales with primary infertility and thirty healthy women. The results were analyzed using student's-test. There were significant ($p<0.001$) decreases in CAT and GST activity level sins era of females with primary infertility when compared with those of the control group. In contrast, MDA levels were found to increase significantly ($p<0.001$) in females with primary infertility when compared with those of the control group (Table 3.1).

Table 3.1 : Levels of Malondialdehyde (MDA), Catalase (CAT) and Glutathione -S -Transferase (GST) in Infertile Women and Control Group

Parameters	Subjects	NO.	Mean ± SD	Range	P-value
MDA (µM)	Control	30	1.74 ± 0.75	0.54 –3.10	
	Patients	84	4.12 ± 1.24	2.29 –8.08	<0.001
CAT (U/ml)	Control	30	6.82 ± 4.72	1.74 –22.42	
	Patients	84	4.5 ± 2.21	0.78 –9.68	<0.001
GST (U/L)	Control	30	1628.42 ± 284.86	1104.69 –2335.63	
	Patients	84	731.57 ± 190.90	284.06 –1136.25	<0.001

b) Relevance of Ages of Infertile Women with Malondialdehyde, Catalase and Glutathione –S-Transferase Levels

To verify the impact of age on MDA, CAT and GST values in infertile women, patients were categorized into 3 groups. Group A consisted of 29 patients of ages (18–25 years), group B consist of 34patients of ages (26– 33 years) and group C consist of 21 patients of ages (34–41 years).

The results indicated significant ($p<0.001$) elevation of MDA levels in the three groups of patients when compared with those of the control group. On the other hand, CAT and GST activities exhibited significant ($p<0.01$ and <0.001 respectively) decreases in the three groups of patients with respect to those of the control groups. The linear regression analysis demon strated significant ($r = 0.27$, $p<0.05$) positive correlation for MDA levels and significant negative correlations for CAT ($r = - 0.24$, $p<0.05$) and GST levels ($r = - 0.26$, $p<0.05$) with the age of in far tile women (Table 3.2, 3.3).

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Table 3.2 : Levels of Malondialdehyde (MDA) , Catalase (CAT) and Glutathione -S- Transferase (GST) in Various age Related Groups of Infertile Women

Parameters	Group	NO.	Mean ± SD	Range	P-value
MDA (µM)	Control	30	1.74 ± 0.75	0.54 –3.10	
	18-25 y	29	3.85 ± 1.33	2.42 –8.08	<0.001
	26-33 y	34	4.0 ± 0.78	2.29 –6.06	<0.001
	34-41 y	21	4.74 ± 1.42	2.69 –7.81	<0.001
CAT (U/ml)	Control	30	6.82 ± 4.72	1.74 –22.42	
	18-25 y	29	4.54 ± 2.52	1.57 –9.68	<0.01
	26-33 y	34	4.97 ± 2.12	0.92 –8.59	<0.01
	34-41 y	21	3.64 ± 1.62	0.78 –6.48	<0.01
GST (U/L)	Control	30	1628.42 ± 284.86	1104.69 –2335.63	
	18-25 y	29	733.56 ± 222.33	284.06 –1136.25	<0.001
	26-33 y	34	746.89 ± 166.82	441.88 –1073.13	<0.001
	34-41 y	21	650.79 ± 167.75	347.19 –883.75	<0.001

Table 3.3 : Correlation Factors of Serum Malondialdehyde (MDA), Catalase(CAT) and Glutathione-S-Transferase (GST) Levels with Age in Infertile Women

Parameters	**r**	**P-value**
MDA	**0.27**	**<0.05**
CAT	**– 0.24**	**<0.05**
GST	**– 0.26**	**<0.05**

c) Influence of Body Mass Index on Malondialdehyde, Catalase and Glutathione – S Transferase Levels in Infertile Women

To understand the effect of body mass index (BMI) on the levels of serum MDA, CAT and GST in female infertility, patients were categorized into three groups. Group 1 consisted of 26 patients who had BMI values ≤ 25 Kg/m2 (normal females). Group 2 comprised 28patients who had BMI > 25–30 Kg/m2 (overweight) and Group 3comprised 30 patients who had BMI >30 Kg/m2 (obese).

The results pointed out a significant ($p<0.001$) increase of MDA and significant decreases of CAT ($p<0.01$) and GST ($p<0.001$) levels in the three groups of infertile women when compared with the control group (Table 3.4). The linear regression analysis stated significant ($r = 0.23$, $p<0.05$) positive correlation for MDA and significant ($r = – 0.26$, $p<0.05$) negative correlation for CAT levels with BMI values in the infertile women (Table 3.5).

Table 3.4 : Influenc of Body Mass Index (BMI) on Malondialdehyde (MDA), Catalase(CAT) and Glutathione -S- Transferase (GST) Levels in Infertile Women

Parameters	Group	NO.	Mean ± SD	Range	P-value
MDA (µM)	Control	30	1.74 ± 0.75	0.54 –3.10	
	≤25	26	3.77 ± 1.04	2.29 –6.59	<0.001
	>25-30	28	4.17 ± 1.33	2.56 –8.08	<0.001
	>30	30	4.42 ± 1.29	2.42 –7.81	<0.001
CAT (U/ml)	Control	30	6.82 ± 4.72	1.74 –22.42	
	≤25	26	5.34 ± 2.32	0.92 –9.68	<0.01
	>25-30	28	4.41 ± 2.09	0.78 –8.59	<0.01
	>30	30	3.86 ± 2.06	1.26 –8.59	<0.01
GST (U/L)	Control	30	1628.42 ± 284.86	1104.69 –2335.63	
	≤25	26	768.43 ± 208.21	441.88 –1136.25	<0.001
	>25-30	28	729.32 ± 185.9	441.88 –1073.13	<0.001
	>30	30	697.53 ± 183.73	284.06 –1010.00	<0.001

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Table 3.5 : Correlation Factors of Serum Malondialdehyde (MDA) , Catalase (CAT) and Glutathione-S-Transferase (GST) Levels with Body Mass Index (BMI) in Infertile women

Parameters	r	P-value
MDA	**0.23**	**<0.05**
CAT	**– 0.26**	**<0.05**
GST	**– 0.12**	**NS**

d) Relevance of Etiology of Infertility to Malondialdehyde, Catalase and Glutathione -S Transferase Levels in Infertile Women

To verify the impact of infertility causes on MDA,CAT and GSTvalues in infertile women, patients were categorized into 3 groups. Group A consisted of 37 females of ovulatory factor, group B consist of 14females of tubal and uterine factors and group C consist of 33 females of unexplained factor. As shown in table 3.6, the three groups of infertile women showed a significant ($p<0.001$) elevation of MDA and significant decreases of CAT ($p<0.05$) and GST ($p<0.001$) levels when compared with those of the control group.

Table 3.6 : Levels of Malondialdehyde(MDA), Catalase (CAT) and Glutathione-S- Transferase (GST) in Infertile Women of Various Etiologies

Parameters	Group	NO.	Mean ± SD	Range	P-value
MDA (µM)	Control	30	1.74 ± 0.75	0.54 –3.10	
	OF	37	4.23 ± 1.16	2.42 –7.81	<0.001
	TUF	14	4.20 ± 1.41	2.56 –7.54	<0.001
	UF	33	3.93 ± 1.28	2.29 –8.08	<0.001
CAT (U/ml)	Control	30	6.82 ± 4.72	1.74 –22.42	
	OF	37	4.79 ± 2.35	0.78 –9.68	<0.05
	TUF	14	4.41 ± 2.09	1.59 –8.59	<0.05
GST (U/L)	UF	33	4.43 ± 2.14	0.92 –8.59	<0.05
	Control	30	1628.42 ± 284.86	1104.69 –2335.63	
	OF	37	751.53 ± 191.96	441.88 –1136.25	<0.001
	TUF	14	678.59 ± 215.41	284.06 –1136.25	<0.001
	UF	33	737.41 ± 201.30	284.06 –1041.56	<0.001

O F: Ovulatory Factor
TUF: Tubal and Uterine Factor
U F: Unexplained Factor

e) The Dependency of Malondialdehyde, Catalase and Glutathione –S-Transferase Levels on the Duration of Infertility in Infertile Women

To demonstrate the influence of duration of infertility on MDA, CAT and GST values in infertile women, the linear regression analysis was used to evaluate the data. Significant negative correlations were obtained for CAT ($r = – 0.23$, $p<0.05$) and GST ($r = – 0.27$, $p<0.05$) levels with the duration of infertility. MDA levels stated significant($r = 0.30$, $p<0.01$) positive correlation with duration of infertility (Table3.7).

Table 3.7 : Correlation Factors of Serum Malondialdehyde (MDA), Catalase (CAT), Glutathione-S-Transferase (GST) Levels with the Duration of Infertility in Infertile Women

Parameters	r	P-value
MDA	**0.30**	**<0.01**
CAT	**– 0.23**	**<0.05**
GST	**– 0.27**	**<0.05**

f) The Impact of Menstruation Pattern on the Levels of Malondialdehyde, Catalase and Glutathione -S - Transferase in Infertile Women

To perceive the impact of menstruation pattern on thelevels of MDA, CAT and GST in infertile women, patients were categorized into 2groups. Those of regular cycle were 45 patients and those of irregularcycle were 39 patients. Their data were compared with the values of the control group by using the ANOVA analysis. A significant($p<0,001$)increase of MDA levels andsignificant decreases for CAT ($p<0.01$) andGST ($p<0.001$) activities were observed in the two groupsofpatientswhen compared with those of control group (Table 3.8).

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Levels of Malondialdehyde(MDA), Catalase (CAT Table) and Glutathione –S-Transferase (GST) in Infertile Women with Regular and Irregular Cycle

Parameters	Group	NO.	Mean ± SD	Range	P-value
MDA (µM)	Control	30	1.74 ± 0.75	0.54 –3.10	
	RC	45	4.29 ± 1.31	2.29 –8.08	<0.001
	IRC	39	3.93 ±1.14	2.42 –6.99	<0.001
CAT (U/ml)	Control	30	6.82 ± 4.72	1.74 –22.42	
	RC	45	4.32 ± 2.12	0.78 –8.59	<0.01
	IRC	39	4.73 ± 2.24	1.26 –9.68	<0.01
GST (U/L)	Control	30	1628.42 ± 284.86	1104.69 –2335.63	
	RC	45	740.67 ± 177.99	347.19 –1073.13	<0.001
	IRC	39	713.80 ± 207.93	284.06 –1136.25	<0.001

RC: Regular Cycle
IRC: Irregular Cycle

g) Correlations of FSH and LH Concentrations with Malondialdehyde, Catalase and Glutathion STransferase Levels in Infertile Women

To verify the relevance of FSH and LH concentrations to the MDA, CAT and GST levels in infertile women, the linear regression analysis was used to evaluate the data. The results indicated significant ($r = 0.28$, $p<0.05$) positive correlation for MDA levels with the FSH concentrations and significant ($r = -0.29$, $p<0.05$) negative correlation with LH concentrations. CAT showed significant ($r = 0.30$, $p<0.05$) positive correlation with FSH concentrations. GST activity exhibited significant ($r = 0.24$, $p<0.05$) positive correlation with LH levels in infertile women (Table 3.9).

Table 3.9 : Correlations of Serum Malondialdehyde (MDA),Catalase (CAT) and Glutathione-S-Transferase (GST) with FSH and LH Levels in Infertile Women

Parameters		**r**	**p-value**
MDA	**FSH**	**0.28**	**<0.05**
	LH	**– 0.29**	**<0.05**
CAT	**FSH**	**0.30**	**<0.01**
	LH	**0.02**	**NS**
GST	**FSH**	**– 0.07**	**NS**
	LH	**0.24**	**<0.05**

VI. Discussion

Successful pregnancy results from an interaction between myriad physiological processes in both men and women. Any disruption to this interactive system, whether in a man or woman, can result in an inability to have a biological child called infertility (4). ROS exert their cytotoxic effects by causing per oxidation of membrane phospholipids, which results in an increase in membrane permeability, loss of membrane integrity, enzyme inactivation, structural damage to DNA and cell death (11). Oxidative stress can have detrimental effects on female fertility by affecting ovulation, fertilization, embryo development, and implantation (4,12). Thus, OS is considered a cause of female infertility. This is particularly clear in cases of

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endometriosis (13). It is suggested that OS is caused by ROS overproduction rather than antioxidant depletion (14).

The results indicate that infertile women have increased serum level of MDA and decreased serum levels of GST and CAT as compared to fertile women. They are in agreement with previous reports.

Veena Bhaskar S et al have found significantly higher concentration of MDA in serum of infertile women than in fertile women (15). Savita Setal have shown significantly high plasma levels of MDA in infertile women when compared to parous women and this is noticed from there ductions of levels of eicosapentaenoic acid (EPA), and more so indocosahexaenoic acid (DHA), they suggested that these changes are consequence of increased oxidative stress that mediate lipid per oxidation Product , i.e. MDA (16).

In the present study, MDA levels were found to be elevated with advancing age in infertile women suggesting raised lipid per oxidation in these patients. The rise seems to be developed as a consequence of 15declined production of antioxidant enzymes. Such decline was apparent for the activities of CAT and GST in association with the elevation of MDA levels as ages of the patients were advanced. Thus, aging could be considered as a risk factor for elevation of oxidative stress, and impaired fertility in aged females involves the imbalance in there do x potentials of these patients.

The present results were in a agreement with previous works in which follicular fluid aspirates from twelve young women aged 27–32years and twelve older women aged 39–45 years undergoing IVF treatment were analysed for the activity and protein expression of catalase, SOD, G-PX, GST and G-Red. The specificactivity of catalasewas _60% lower in the older women when compared with the youngerwomen. GST was also lower in the older women with respect to the younger patients (17). It is well known that germ cell membranes are particularly vulnerable to be attacked by ROS, being very rich in polyunsaturated fatty acids (18).

The current results illustrated elevated lipid peroxidation in association with depleted cytoprotective enzyme activity, i.e., CAT and GST, as weight of infertile women was raised. The reason of the dysregulation of the redoxe system may due to increased levels of adipose NADPH oxidase activity which raise the production of ROS in accumulated fat (19). This hypothesis was proved by experimental obeserats, in which rised lipid peroxidation has been observed (20).

The link between obesity and oxidative stress has been suggested in some studies. A good correlation between BMI and oxidative stress has been reported, indicating obesity as an independent risk factor for plasma lipid peroxidation (21,22). Obesity may induce systemic oxidative stress, which is, in turn, the underlying cause of selective increase in ROS, 16 dysregulation of adipocytokines and development of metabolic syndrome (23).

In the present investigation, the elevation of lipid peroxidation and the depletion of antioxidant enzymes seems to vary similarly in the infertile women regardless to the etiology of infertility. The consequences appear to be equal precipitation in the pathophysiology of there productive systems in infertile patients. These evidences suggest that oxidative stress is an independent etiologic factor in female infertility. Such independency may relate to the activation of macrophages which are a source of generation of ROS (24).

In the present study, raised lipid peroxidation and decreased antioxidant enzyme activities are evident as the duration of infertility was prolonged in the enrolled infertile women. The results suggest that prolonging of the duration of infertility exaggerate the implication of oxidative stress in the impairment of female infertility.

OS is involved in the modulation of cyclical changes in the endometrium. Altered SOD and ROS levels have been demonstrated in the endometrium during the late-secretory phase, just before menstruation. An elevated lipid peroxide concentration and decreased SOD concentrations have been reported in human endometrium in the latesecretory phase, and these changes may be responsible for the breakdown of the endometrium, implicating the involvement of OSin the process of menstruation (25). The expression of endothelial nitric oxide synthase(NOS) and inducible NOS have been demonstrated in the humanendometrium and the endometrial vessels (26,27). Endothelial NOS is also thought to bring about changes that prepare the ndometrium for im plantation (25).

FSH was found to be positively correlated with MDA and CAT levels, suggesting oxidative effect in there productive system of the infertile women. In contrast, LH was ascertained to be correlated negatively with MDA level and positively with GST activity, suggesting antioxidative, i.e. protective role in the reproductive system of these patients. The oxidative effect of FSH may be induced through the action of progesterone, since this hormone has been documented to elicit oxidative stress in rats (28). Unfortunately progesterone and estradiolconcentrations could not be measured in the studied patients due to technical limitations. The protective role of LH may be produced through the action of estradiol, the beneficial function of estradiol has been elucidated in rats (28).

Elevated endogenous LH concentration seems to be a powerful protective enzyme against oxidative stress, since it is correlated negatively with MDA level and positively with GST activity. These observations are essentially related to vitamin E. It was demonstrated that LH administration is associated with accumulation of ovarian vitamin E (29). The mechanism of LH stimulation of vitamin E accumulation is not clear, but may be due

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to increased lipoprotein accumulation by the corpusluteum. Vitamin E is transported by lipoproteins inplasma (30). LH isknown to stimulate the accumulation of lipoproteins by the rat corpusluteum (31,32). Hence, the accumulation of lipoproteins, may be the reason of elevated vitamin E and consequently the antioxidative function of LH in the reproductive tract.

References Références Referencias

1. Pasqualotto F.F; Sharma R.K; Kobayashi H., et al: Oxidativestress in normospermic men undergoing infertility evaluation.Andrology, 2001; 22: 316-322.
2. Benjamin N; Peter N; Rakesh K; et al. Varicocele is associatedwith elevated spermatozoal reactive oxygen species production anddiminished seminal plasma antioxidant capacity. Urology, 1999 ;161:1831-1834 .
3. Iborra A; Palacio J.R; and Martinez P. Oxidative stress and autoimmune response in the infertile woman. Chemical immunology and allergy, 2005; 88: 150–162.
4. Agarwal A and Allamaneni S.S: Role of free radicals in female reproductive diseases and assisted reproduction. Reproductive Biomedicine Online, 2004; 9: 338–347.
5. Agarwal A; Gupta S and Sikka S. The role of free radicals and antioxidants in reproduction. Current Opinion in Obstetric and Gynecology, 2006; 18: 325–332.
6. Agarwal A; Said TM; Bedaiwy MA, et al. Oxidative stress in an assisted reproductive techniques setting. Fertility and Sterility, 2006; 86(3): 503–512.
7. Guidet B and Shah Sv: Enhanced in vivo H2O2 generation by ratkidney in glycerol- induced renal failure. American journal of physiology, 1989; 1257: 440-444.
8. Aebi H.: Methods of enzymatic analysis, ed., New York, AcademicPress, 1974; 2: 674.
9. Habig W; Pabst M; and Jakoby W. Glutathione S-Transferase. The First Enzymatic Step in Mercapturic Acid Formation. Biological Chemistry, 1974; 22(25): 7130-7139.
10. Manual of FSH determination by VIDAS FSH Kit , Biomerieux-France, REF 30407.Halliwell B. Free radicals, antioxidants and human disease: curiosity, cause or consequence? Lancet 1994; 54: 485-500.
11. Agarwal A, Gupta S and Sharma R. Oxidative stress and its implications in female infertility – a clinicians perspective. Reproductive Biomedicine Online, 2005; 11(5): 641–650.
12. Bedaiwy M.A and Falcone T. Peritoneal fluid environment in endometriosis: Clinico pathological implications. Minerva Ginecologica, 2003; 55: 333–345.
13. Agarwal A and Allamaneni S. Oxidants and antioxidants in human fertility. Middle East Fertility Journal, 2004; 9: 187–197.
14. Veena Bhaskar S; Sharmila Upadhya; Satish Kumar Adiga; et al. Evaluation of oxidative stress, antioxidants and prolactin in infertile women. Indian Journal of Clinical Biochemistry, 2008 ; 23186-190
15. Savita S. Mehendalei; Anitha S. Kilari Bams; Chaya S. Deshmukal. Oxidative stress-mediated essential polyunsaturated fatty acid alterations in female infertility. Human Fertility, 2009; 12(1):28–33.
16. Carbone M.C; Tatone C; Delle Monache S; et al. Antioxidant enzymatic defences in human follicular fluid: characterization and age-dependent changes. Molecular Human Reproductive, 2003; 9:639–643.
17. Lenzi A; Gandini L; Lombardo F; et al. Polyunsaturated fatty acids of germ cell membranes, glutathione and blutathione-dependent enzyme- PHGPx: from basic to clinic. Contraception, 200265:301-304.
18. Gower BA; Nagy T.R; Goran M.I; et al. Fat distribution and plasma lipid-lipoprotein concentrations in pre- and postmenopausal women. International Journal of Obesity and Related MetabolicDisorders1998; 22: 605–611.
19. Dobrian A.D, Davies M.J, Prewitt R.L, et al. Development of hypertension in a rat model of diet induced obesity. Hypertension, 2000:35: 1009-1015.
20. Trevisan M; Browne R; Ram M; et al. Correlates of markers of oxidative status in the general population. American Journal of Epidemiology, 2001; 154: 348–56.
21. Olusi SO. Obesity is an independent risk factor for plasma lipid peroxidation and depletion of erythrocyte cytoprotective enzymesin humans. International Journal of Obesity and Related Metabolic Disorders, 2002; 26: 1159–1164.
22. Furukawa S; Fujita T; Shimabukuro M; et al. Increased oxidativestress in obesity and its impact on metabolic syndrome. Journal of Clinical Investigation, 2004; 14: 1752–1761.
23. Szczepanska M; Kozlik J; Skrzypczak J et al. Oxidative stress maybe a piece in the endometriosis puzzle. Fertility and Sterility, 2003; 79: 1288–1293.
24. Sugino N; Takiguchi S; Kashida S, et al. Superoxide dismutaseexpression in the human corpus luteum during the menstrual cycleand in early pregnancy. Molecular Human Reproduction, 2000; 6(1): 19–25.
25. Rosselli M; Keller PJ and Dubey RK. Role of nitric oxide in the biology, physiology and pathophysiology of reproduction. Human Reproduction Update, 1998; 4(1): 3-24.
26. Ota H; Igarashi S; Hatazawa J; et al. Endothelial nitric oxidsynthase in the endometrium during thEmenstrual cycle in patientswith endometriosis and adenomyosis. Fertility and Sterility, 1998; 69(2): 303-308.

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27. Yakup Kumtepe; Bunyamin Borekci; Mehmet Karaca; et al. Effect of acute and chronic administration of progesterone, estrogen, FSH and LH on oxidant and antioxidant parameters in ratgastric tissue. Chemico-Biological Interactions, 2009:182: 1–6.
28. Raymond F; Aten, Krishna M. Duarte; and Harold R. Behrman Regulation of Ovarian Antioxidant Vitamins, Reduced Glutathione, and Lipid Peroxidation by Luteinizing Hormone and Prostaglandin F2α. Biology Of Reproduction, 1992;46: 401-407.
29. Halliwell B and Gutteridge J.M.C. Free radicals in biology and medicine. 4th ed. Oxford, UK: Clarendon Press; 2007.
30. Strauss JF; MacGregor C and Gwvnne Jr. Uptake of high density lipoproteins by rat ovaries in vivo and dispersed ovarian cells in vitro. Direct correlation of high density lipoprotein uptake with steroidogenic activity. Journal of Steroid Biochemistry, 1982; 16:525-53 1.
31. Rajkumar K; Couture RL and Murphy BD. Binding of highdensitylipoproteins to luteal membranes: the role of prolactin. Luteinizing hormone and circulating lipoproteins. Biology of Reproduction, 1985; 32: 546-555.

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Continuous Movement of Stems and Cement in both Polished and Rough Tapered Femoral Stems in a Biomechanical Model

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Abstract - Polished tapered stems used in hip replacement subside into bone cement without loosening. However, subsidence of rough stems leads to loosening of the prosthesis. There have been no reports on continuous movement of cement and stem. We believed that the relation of stem subsidence to cement differed by stem surface finish. To determine whether this was the case, we compared the pattern of movement of stem and cement in both polished and rough stems in a biomechanical model. Methods Two sizes of polished stems and of roughprocessed stems (rough stems) were fixed into composite femurs with different cement thickness, and a 1-Hz dynamic load was applied for a total of 2 million cycles. An 8-hour no load period was set after every 16 hours of load. Continuous stem motion was measured by a digital displacement gauge, and continuous cement motion was recorded by a strain gauge on an aluminum plate inserted in the cement.

All stems subsided downward during the load periods but rose during the no load periods in a 1-day cycle, and a great deal of subsidence were seen by 200,000 cycles– after loading. For polished stems, more than 85% of the total subsidence occurred by 1 million loading cycles, and subsidence rates converged after that. Stem subsidence was not accompanied with cement subsidence. For rough stems, however, subsidence progressed linearly and was accompanied by cement subsidence.The convergence of stem subsidence and lack of synchronization with cement subsidence in polished stems indicated taper slip into cement without loosening. Early subsidence in rough stems leads to progressive subsidence.

GJMR-H Classification : *NLMC Code: WE 312*



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Ayumi Kaneuji [α], Jun Tomidokoro [σ], Kenichi Hirosaki [ρ], Masahiro Takano [ω], Hiroyoshi Iwaki[¥] & Tadami Matsumoto[§]

Abstract - Polished tapered stems used in hip replacement subside into bone cement without loosening. However, subsidence of rough stems leads to loosening of the prosthesis. There have been no reports on continuous movement of cement and stem. We believed that the relation of stem subsidence to cement differed by stem surface finish. To determine whether this was the case, we compared the pattern of movement of stem and cement in both polished and rough stems in a biomechanical model.

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I. Introduction

According to fixation theory, femoral stems for cemented hip replacements are of two types: loaded tapered stems and composite-beam stems [9, 14]. In composite-beam stems, tight bonding of the stem and cement is necessary to achieve long-term stem stability. Stem surfaces are processed to be either matte or rough, with or without a pre-coating of polymethylmethacrylate. In contrast, loaded tapered stems slip in cement, and the taper operates like a wedge to transfer the weight load to the cement and bone.

Therefore, these stems are polished tapers without collars [9]. Lee et al. [12] noted that a polished tapered stem does not cause shear stress but that compressive force and hoop stress will occur because of taper slip at the stem–cement interface. In the rough stem, micromotion at the stem–cement interface does not occur; instead, the risk of subsidence exists when weak bonding at the cement–bone interface is broken by overload.

Researchers have demonstrated, using radiostereometric analysis, that polished tapered stems slip in vivo in cement [1, 2, 15, 16], and others have detected slight stem subsidence and retroversion even in composite-beam stems [1, 2, 16].

Most subsidence of polished tapered stems has been seen in the early postoperative phase, with some detected later in the clinical setting [15, 16]. However, there have been no reports of continuous observation of stem and cement movement even in experimental studies. Therefore, we conducted a study to observe consecutive subsidence for polished tapered stems, rough stems, and cement around stems in an ex vivo cemented total hip arthroplasty model designed to mimic the conditions of walking throughout the human life cycle.

II. Materials and Methods

a) Cemented Stem Model

For the polished stem, we used a collarless polished tapered stem (CPT stem, Zimmer, Warsaw, IN, USA) with a surface roughness of ≤0.1 μm and tapered in the coronal and sagittal planes. For the rough stem, we used a CPT stem processed to a rough finish with a roughness of 5.291 μm (SD, 1.100 μm) (Fig. 1). A centralizer dedicated to the CPT stem was attached to the stem tip. Two sizes (sizes 2 and 3) were used both for the polished stems and for the rough stems in this experiment. The proximal transverse diameter and offset for size 3 were larger than those for size 2 by 2.5 mm

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and 1 mm, respectively. A size 3 rasp was used for the preparation of implantation in all femurs.

Therefore, the cement mantle for the experiment using size 2 stems was thicker than that using size 3 stems. The experiment was performed four times: once each for the size 2 polished stem and the size 3 polished stem and once each for the size 2 rough stem and the size 3 rough stem.

We used composite femurs (composite femur 3303, Pacific Research Laboratories, Vashon, WA, USA) similar in shape, mechanical characteristics, and material to those of human femurs for this study [5, 8]. For stem insertion, we cut the composite femur neck obliquely at 20 mm distal to the greater trochanter top and cut the distal part of the femur at 230 mm from the greater trochanter top before its attachment to the fixator.

We created 16 holes, 8 on the proximal side and 8 on the distal side of the composite femur, each 6 mm in diameter, for tight fixation of composite bone to the fixator through rods. After the holes were created, the composite femurs were immersed in blended vegetable oil for 24 hours to simulate an environment of bone humidity. It has been reported that cement creep differs by both temperature and humidity [3].

Therefore, we used vegetable oil to allow adequate cement movement in this study [11]. An aluminum plate for observation of cement subsidence was inserted through one of the holes that we had created in the posterior side of the femur at 22 mm distal to the cutting plane of the femoral neck. The other 15 holes were used for fixation of the composite femur by inserting rods from outside a fixator to the cement–bone interface.

We used a fixator for securing the composite femur using machine-structural-use carbon steel and epoxy resin [11]. The exterior of the fixator was made of carbon steel; the interior's epoxy resin was formed to the contours of the composite femur (Fig. 2A). A composite femur was fixed completely with surrounding epoxy resin and 15 rods inserted from the exterior of the fixator to the cement–bone interface through the epoxy resin (Fig. 2B). The bottom of the fixator was also attached to the basal table of the fatigue tester. We injected vacuum-mixed cement (Osteobond; Zimmer, Warsaw, IN, USA) with a cement gun into the composite femur. The medullary canal was plugged distally, and the stem was fixed into pressurized cement using two thumbs. This composite femur had both a cortex and cancellous bone, and a stem was fixed into the cancellous bone with cement after rasping. After we implanted the stem in the composite femur, we kept the temperature of the femur and cement at 37°C by using a heater (G6A92 240V250W, Takigen Mfg., Tokyo, Japan) and attaching a temperature sensor (T-35 thermocouple, Takigen) to the epoxy resin.

b) Load

A dynamic sine-wave load of 3,000 N was applied 2 million times at a frequency of 1 119 Hz to the metal head, which was fixed to the stem at 15° in the coronal plane [4] using a hydraulic controlled fatigue tester (type 1331, Instron Japan, Kanagawa, Japan). In actual practice, the fixator was inclined 15° horizontally in the coronal plane and the load was applied vertically. The 3,000-N load is equivalent to the load applied to the hip joint when a person weighing 70 kg stands on one leg, and 2 million applications of load correspond to 2 years of walking [6, 19].

The tester cannot perform complex motions such as walking; therefore, we tested only single-stance equivalent load in this study. Assuming sleep time, we provided a no-load period of 8 hours between 16-hour periods of load application. Therefore, 38 days were required for one composite femur experiment.

c) Data Measurement

We measured stem subsidence and strain on the aluminum plate inserted in cement. CPT stems have a screw hole on the upper lateral portion. For stem subsidence, a digital displacement gauge (5-mm DTH-A-5, Kyowa Electronic Instruments, Tokyo, Japan) was applied to the attachment screwed into the screw hole of the stem, and stem motion was recorded as the digital data of displacement, with a downward direction being expressed as a positive value (Fig. 2C). Because of complete fixation of the composite femur with a fixator, the data from the digital displacement gauge was considered to represent stem subsidence. The displacement gauge was able to measure upward-direction values because the gauge could move up and down smoothly.

We measured stem subsidence over time; the data were automatically entered into a personal computer via software for measurement collection and analysis (sensor interface PCD-300A, Kyowa Electronic Instruments). The load and no-load periods in a day were classified into early, middle, and late phase at each period. In each phase, 10,000 data sets corresponding to approximately 8 minutes were stored as one file per 30 minutes; we collected a total of 912 files. The obtained data were corrected and converted to distance units. Stem subsidence in each period was defined as the mean of the collected values in the two consecutive files (20,000 data sets) after the start of each phase.

Before the cement hardened, we inserted a 1-mm-thick metal plate into the cement through the posterior-side hole in the composite femur. After the cement had hardened, we exchanged the metal plate for an aluminum plate with a strain gauge pasted onto it (Fig. 3). The deformity of the aluminum plate represented the longitudinal displacement of cement. The data from the strain gauge reflected cement

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subsidence or force to the cement around the aluminum plate.

Continuous strain data were automatically recorded by a computer. Using lateral radiographs before loading, we confirmed that the aluminum plate was positioned in the cement and was not in contact with the femoral stem. Deformity of the aluminum plate was confirmed by radiographs obtained after the experiment.

III. Results

Subsidence in both sizes of polished stems was rapid by 200,000 loading cycles and then decreased slowly (Table 1, Fig. 4). The final amount of subsidence was 1.229 mm for the size-2 stem and 0.680 mm for the size-3 stem, respectively. By 1 million loading 163 cycles (early loading cycles), 85.8% and 92.5% of total subsidence had occurred for the size-2 stem and the size-3 stem, respectively.

Polished stems subsided during the load periods but rose during the no load periods in a 1-day cycle (Fig. 5). The average ratio of stem subsidence to stem rising in 1 day, determing by the equation

$$\frac{\text{stem rising}}{\text{stem subsidence}} \times 100\ (\%)$$

was 85.1% in the size-2 stem and 91.6% in the size-3 stem by the early loading cycles and was 96.3% in the size-2 stem and 97.2% in the size-3 stem at a point between 1 million and 2 million loading cycles (late loading cycles). The ratio for stem rising was greater in the late loading cycles of the experiment than in the early loading cycles, and significantly, stems returned to close to their original position before any subsidence ($P < 0.001$; unpaired t-test).

In both sizes of the rough stems, there was a great deal of subsidence early on in loading and then it progressed (Table 1, Fig. 4). The amount subsidence after 2 million loading cycles was 2.715 mm for the size-2 rough stem and 1.971 mm for the size-3 rough stem, respectively, and was greater than that for the polished stems. The amount of subsidence was 1.892 mm for the size-2 rough stem and 1.255 mm for the size-3 rough stem by early loading cycles and was 0.823 mm for the size-2 rough stem and 0.761 mm for the size-3 stem after that.

We analyzed the values only in the size-3 polished and rough stems for the strain of the aluminum plate. Because a setting error occurred in the strain gauges in the size-2 polished stems, making the difference between the data in those stems and the data in the size-2 rough stems much larger than the measurable range. The experiment revealed that there was less deformity of the aluminum plates in the size-3 polished stem than in the size-3 rough stem (Fig. 6A). For the polished stem, the strain of the aluminum plate was not synchronized with stem subsidence. but recovered sometimes independently of stem subsidence (Fig. 7A). Neither stem loosening nor cement cracking were seen in radiographs obtained after the experiment. This demonstrated that the polished tapered stems slipped into cement without cement subsidence.

In contrats the aluminum plate in size-3 rough bent stem was distally (Fig. 6B), and the strain of the plate was synchronized with stem subsidence in the stem (Fig. 7B). This stem subsidence was accompanied with cement subsidence. The aluminum plate in size-2 rough stems was also bent distally. However, the extent of debonding and loosening at the stem–cement interface could not be determined after the experiment in rough stems of either size. Therefore, rough stems failed at the cement–bone interface in the early stage of our experiment and were considered to represent models of loosening cemented stems.

IV. Discussion

Researchers have demonstrated, using radiostereometric analysis, that polished tapered stems slip in vivo into cement [1, 2, 15, 16]. However, it is difficult to observe stem slip continuously in vivo.

Continuous stem subsidence and strain on the aluminum plate inserted into cement were observed for this study. Polished tapered stems subsided, yet the aluminum plates in them did not bend distally, and stem subsidence did not synchronize the strain on aluminum plates. This fact demonstrated that stems slipped into the cement without cement subsidence.

In this study, stem subsidence did not progress linearly but converged slowly after the initial subsidence. The slow subsidence after the initial large amount of subsidence in polished tapered stems is similar to the pattern found in clinical studies using roentgen stereo photogrammetric analysis [1, 15, 16]. Our findings of a lack of stem loosening and a lack of cement cracking were also similar to the findings of clinical studies [9, 10, 18].

Stem subsidence occurred in the loading periods, but stems rose slightly in the no load periods in both types of stems. We think that the rising of the stem was caused by stress relaxation in the cement. Stress relaxation is a characteristic of cement in which stress stored in the cement during loading is released in the no load periods. The role of stress relaxation has been shown to be self-protection from cement breakage [7, 12]. In our study, stress relaxation tended to occur in the polished tapered stems. The strain gauge, which indicated cement movement or force to the cement, produced higher and lower values also in the polished tapered stem. It also might indicate stress relaxation of cement against a stick-slip phenomenon. Verdonschot

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et al. [17] noted that the subsidence pattern was stepwise and that cement creep was related to this phenomenon. The change in strain on the aluminum plate was thought to reveal the change in force in the cement. Therefore, decreasing force, instead of subsidence, might have been caused by stress relaxation.

In the rough stems in our study, most subsidence occurred on the first day of the experiment, and then it decreased linearly. Stem subsidence was accompanied by cement subsidence, which was confirmed by strain gauges. The rough stems became models of loosening in our study.

It was unclear why the bone–cement interface of rough stems broke so quickly in our study. We surmised that the stems could not slip in the cement because of their roughness and because the bonding composite of stem and cement caused shear stress at the bone–cement interface. The artificially processed tapered stems with no collar that were made for this study did not work as a composite beam, and thus they might have led to early deboning at the cement–bone interface.

Subsidence of the size-2 polished tapered stem with a thick cement mantle was greater than that of the size-3 stem with a relatively thin cement mantle. It has been hypothesized that a thin cement mantle can more easily be restricted by bone because the volume of cement is smaller than in thicker mantles [13].

Results were very different by surface roughness in our study. Though stem subsidence occurred in both stem types, subsidence rates converged for polished stems and the use of rough stems led to stem loosening. The early subsidence of rough stems of the composite-beam type must be carefully observed to detect loosening.

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References Références Referencias

1. Alfaro-Adrián J, Gill HS, Murray DW. Cement migration after THR. A comparison of Charnley Elite and Exeter femoral stems using RSA. J Bone Joint Surg (Br). 1999;81:130–134.
2. Alfaro-Adrián J, Gill HS, Murray DW. Should total hip arthroplasty femoral components be designed to subside? A radiostereometric analysis study of the Charnley Elite and Exeter stems. J Arthroplasty. 2001;16:598–606.
3. Arnold JC, Venditti NP. Effects of environment on the creep properties of a poly(ethylmethacrylate) based bone cement. J Mater Sci Mater Med. 2001;12:707–717.
4. Bergmann G, Graichen F, Rohlmann A. Hip joint loading during walking and running, measured in two patients. J Biomech. 1993;26:969–990.
5. Cristofolini L, Viceconti M, Cappello A, Toni A. Mechanical validation of whole bone composite femur models. J Biomech. 1996;29:525–535.
6. Crowninshield RD, Brand RA, Johnston RC, Milroy JC. The effect of femoral stem cross-sectional geometry on cement stresses in total hip reconstruction. Clin Orthop Relat Res. 1980;(146):71–77.
7. Eden OR, Lee AJ, Hooper RM. Stress relaxation modelling ofpolymethylmethacrylate bone cement. Proc Inst Mech Eng H. 2002;216:195–199.
8. Heiner AD, Brown TD. Structural properties of a new design of composite replicate femurs and tibias. J Biomech. 2001;34:773–781.
9. Howie DW, Middleton RG, Costi K. Loosening of matt and polished cemented femoral stems. J Bone Joint Surg (Br). 1998;80:573–576.
10. Kaneuji A, Sugimori T, Ichiseki T, Fukui K, Yamada K, Matsumoto T. The relationship between stem subsidence and improvement in the radiolucency in polished tapered stems. Int Orthop. 2006;30:387–390.
11. Kaneuji A, Yamada K, Hirosaki K, Takano M, Matsumoto T. Stem subsidence of polished and rough double-taper stems. In vitro mechanical effects on the cement–bone interface. Acta Orthop. 2009;80:270–276.
12. Lee A J C. The time-dependent properties of polymethylmethacrylate bone cement: the interaction of shape of femoral stems surface finish and bone cement. In: Learmonth ID, ed. Interfaces in Total Hip Arthroplasty. London: Springer-Verlag; 1990:11–19.
13. Lee AJ, Ling RS, Gheduzzi S, Simon JP, Renfro RJ. Factors affecting the mechanical and viscoelastic properties of acrylic bone cement. J Mater SciMater Med. 2002;13:723–733.
14. 14. Shen G. Femoral stem fixation. An engineering interpretation of the long-term outcome of Charnley and Exeter stems. J Bone Joint Surg (Br). 1998;80:754–756.
15. Stefánsdóttir A, Franzén H, Johnsson R, Ornstein E, Sundberg M. Movement pattern of the Exeter femoral stem; a radiostereometric analysis of 22 primary hip arthroplasties followed for 5 years. Acta Orthop Scand. 2004;75:408–414.
16. Sundberg M, Besjakov J, von Schewelow T, Carlsson A. Movement patterns of the C-stem femoral component: an RSA study of 33 primary total hip arthroplasties followed for two years. J Bone Joint Surg (Br). 2005;87:1352–1356.
17. Verdonschot N, Huiskes R. Subsidence of THA stems due to acrylic cement creep is extremely

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sensitive to interface friction. J Biomech. 1996;29:1569–1575.
18. Yates P, Gobel D, Bannister G. Collarless polished tapered stem: clinical and radiological follow-up over 5 years. J Arthroplasty. 2002;17:189–195.
19. Zahiri CA, Schmalzried TP, Szuszczewicz ES, Amstutz HC. Assessing activity in joint replacement patients. J Arthroplasty. 1998;13:890–895.

Table 1 : The amount and rate of stem subsidence

	Polished size 2		Polished size 3		Rough size 2		Rough size 3	
Day	Subsidence in mm (SD)	Rate	Subsidence in mm (SD)	Rate	Subsidence in mm (SD)	Rate	Subsidence in mm (SD)	Rate
1–5	0.773 (0.004)	62.9	0.518 (0.008)	76.2	1.094 (0.009)	38.6	0.887 (0.019)	45.0
6–10	0.17 (0.007)	13.8	0.062 (0.004)	9.1	0.355 (0.011)	13.1	0.156 (0.013)	7.9
11–15	0.071 (0.008)	5.8	0.028 (0.006)	4.2	0.302 (0.013)	11.1	0.109 (0.013)	5.5
16–20	0.057 (0.006)	4.6	0.028 (0.008)	4.2	0.279 (0.012)	10.3	0.202 (0.013)	10.2
21–25	0.046 (0.008)	3.7	0.016 (0.007)	2.4	0.247 (0.007)	9.1	0.182 (0.018)	9.2
26–30	0.046 (0.008)	3.7	0.011 (0.005)	1.7	0.200 (0.007)	7.4	0.174 (0.009)	8.8
31–35	0.040 (0.006)	3.2	0.014 (0.006)	2.1	0.172 (0.006)	6.3	0.182 (0.052)	9.2
36–38	0.027 (0.004)	2.2	0.002 (0.006)	0.3	0.110 (0.007)	4.1	0.079 (0.027)	4.0
Totals	**1.229 (0.004)**	**100.0**	**0.680 (0.006)**	**100.0**	**2.715 (0.007)**	**100.0**	**1.971 (0.027)**	**100.0**

Subsidence values are shown as average millimeters (standard deviation) during each period; rates are the percentages for each stem group, obtained by dividing each group's subsidence by the total subsidence for type of stem.

Figure 1A–B : Collarless double-taper stems: (A) a rough surface stem; (B) a polished stem



A **B**

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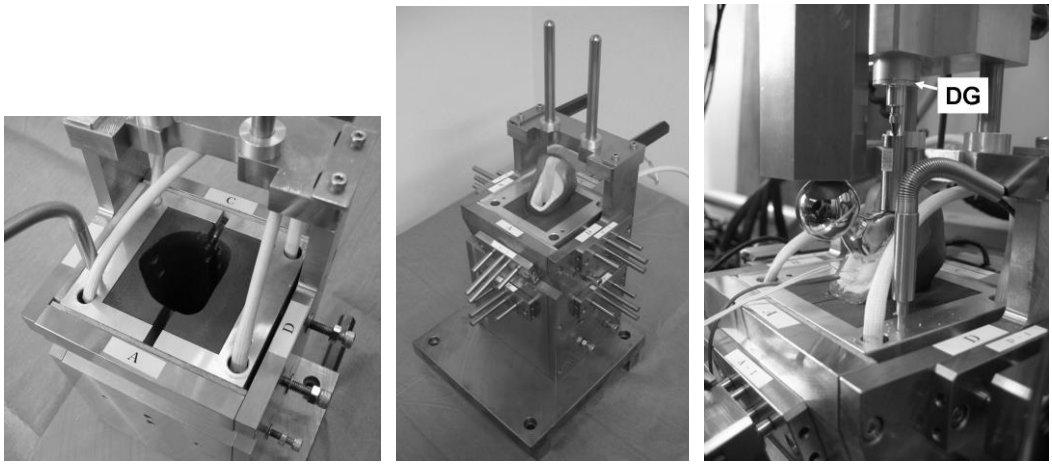


Fig. 2A–C (A) The fixator. The exterior of the fixator was made of carbon steel; the interior's epoxy resin was formed to the contours of the composite femur. (B) A composite femur was fixed completely with surrounding epoxy resin and rods inserted from the exterior of the metal fixator through the epoxy resin. (C) Measurement of stem subsidence. A digital displacement gauge (DG) was applied to the attachment screwed into the proximal lateral side of the stem to measure the amount of displacement.

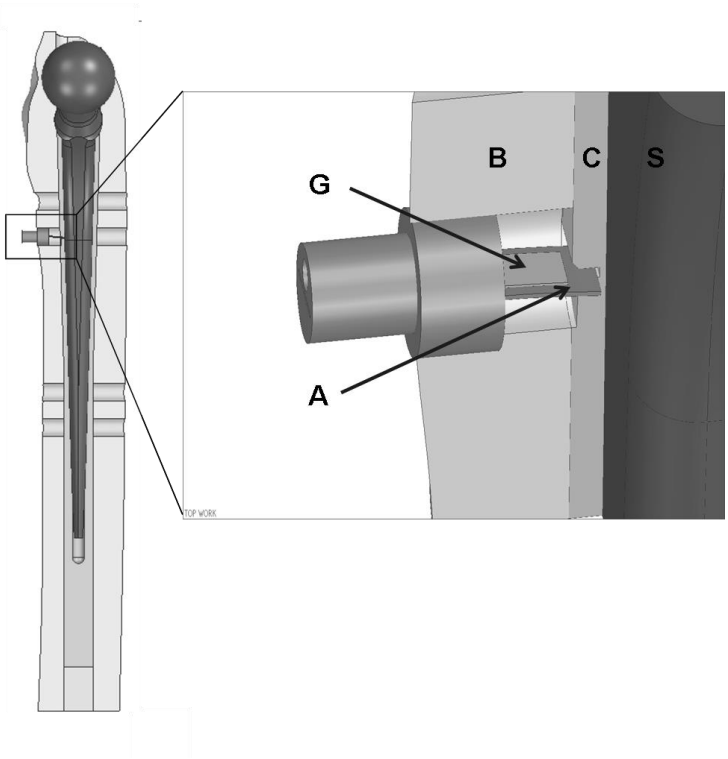


Fig. 3 Strain gauge. The aluminum plate onto which the strain gauge was pasted was inserted in the cement through the proximal posterior hole in the composite femur. The displacement of the aluminum plate represented the longitudinal displacement on the cement. A, aluminum plate; B, composite femur; C, cement; G, strain gauge; S, stem.

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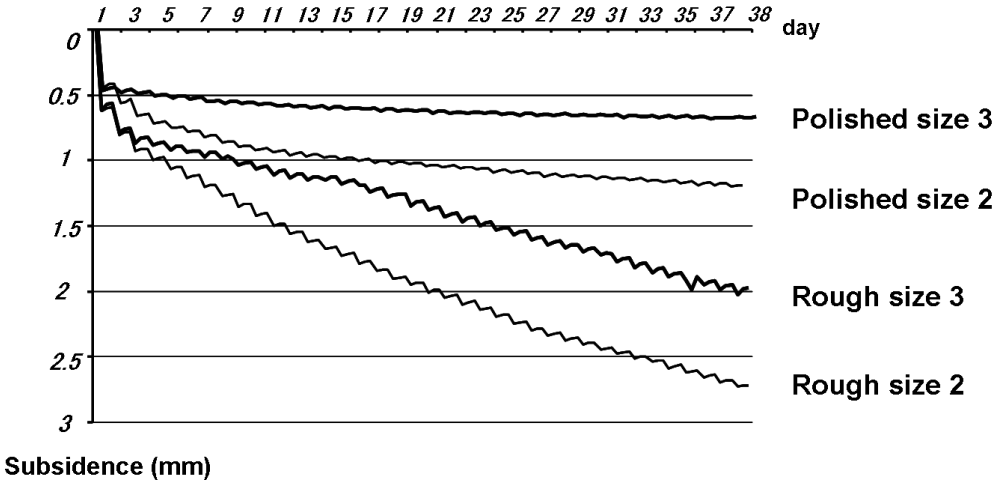


Fig. 4 Stem subsidence. All stems had subsided rapidly by 200,000 loading cycles. Afterward, subsidence for the polished stems converged slowly. However, subsidence after the early period was linearly progressive in the rough stems. The total amount of subsidence in the rough stems was more than two times that for the polished stems of the same size.

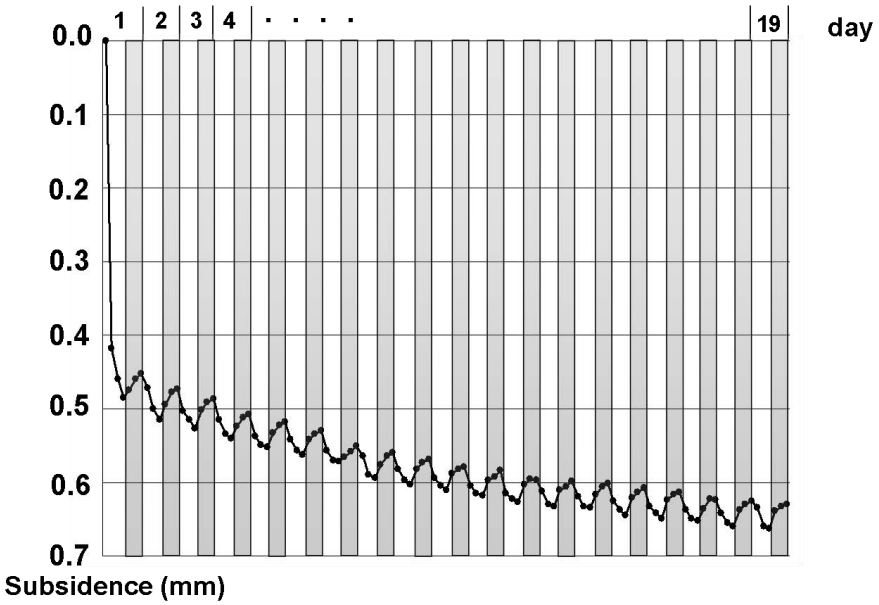
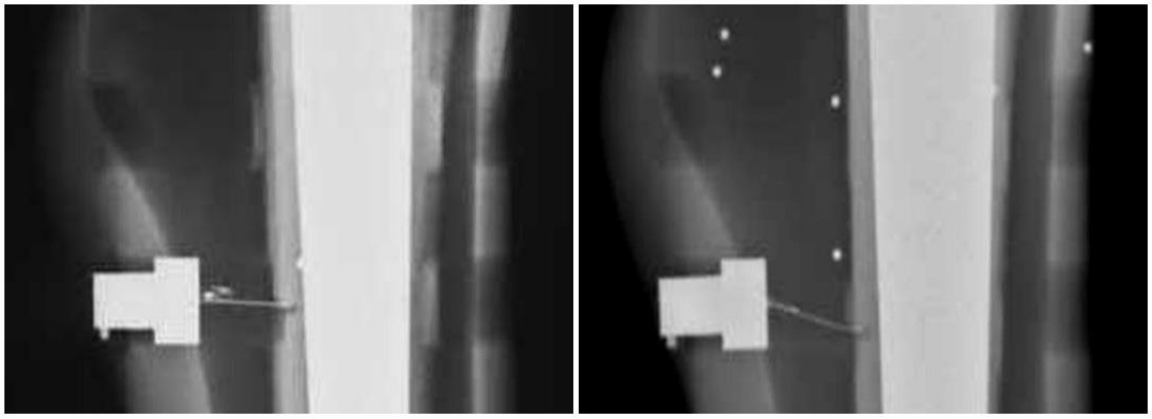


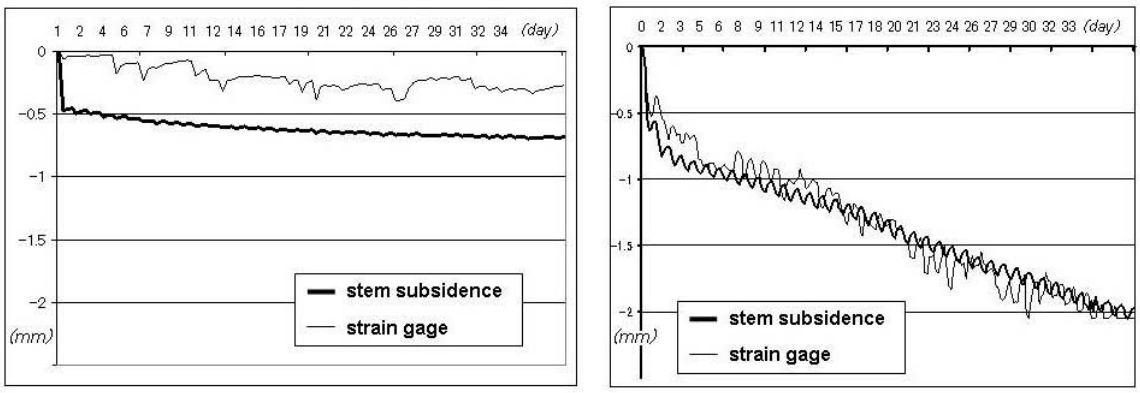
Fig. 5 Enlargement of stem motion during load and nonload in size-3 polished stems: displacement from original position between day 1 and day 19. The stem subsided during the load periods but rose up during the nonload periods. Other stems were also seen to have a similar zigzag motion, seen in Fig. 4

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A **B**

Fig. 6A–B Radiographs of aluminum plates obtained after the experiment. (A) Polished stem. Less deformity of the aluminum plate was seen. (B) Rough stem. The aluminum plate was bent distally.



A **B**

Fig. 7A–B Stem subsidence and strain gage on the aluminum plate. (A) Polished stem. Cement movement was not synchronized with stem subsidence but recovered sometimes independently. (B) Rough stem. Cement subsidence was synchronized with stem subsidence.

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The Etiology and Prevention of Osteoporosis in Greek-O-Arabic (Unani) Medicine

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Abstract - Osteoporosis (pronounced as ahsteoporosis) is characterized by low bone mass with micro architectural deterioration of bone tissue leading to enhance bone fragility, thus increasing the susceptibility to fracture. Although exact numbers are not available, based on available data and clinical experience, 25 million Indians may be affected. Osteoporotic fractures in India occur in both sexes but are more common in females. It may occur at a younger age in India than in the West. The pharmacological interventions are expensive with limited or no cure promise, and the peak bone mass of the population can be increased significantly by appropriate and timely intervention in children. So, the public health measures that are efficacious, safe and cost-effective, must be adopted for the population at large. This calls the attention of the physicians of all the systems of medicine including Greek-o-Arabic (unani) system. Although, there is no description of osteoporosis in Greek-o-Arabic (unani) classical literature yet, the debility of body organs including bones is widely discussed. It is generally said that 'prevention is better than cure', so a specific prevention plan must be structured as per Greek-o-Arabic norms. Nevertheless, before making the prevention plan one must understand the Greek-o-Arabic etiopathology of the disease. Therefore, this work is an attempt to understand the underlying causes and risk factors of osteoporosis, and to construct a mighty prevention plan. To keep the Greek-o-Arabic spirit alive, the typical Greek-o-Arabic terms are not translated into English.

Keywords : *osteoporosis, asbab, su-e-mizaj, su-etarkeeb, tafarruq-e-ittesal, mahiyat-al-marzi.*

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The Etiology and Prevention of Osteoporosis in Greek-O-Arabic (Unani) Medicine

Aisha Aijaz [α] & Anis A. Ansari [σ]

Abstract - Osteoporosis (pronounced as ahsteoporosis) is characterized by low bone mass with micro architectural deterioration of bone tissue leading to enhance bone fragility, thus increasing the susceptibility to fracture. Although exact numbers are not available, based on available data and clinical experience, 25 million Indians may be affected. Osteoporotic fractures in India occur in both sexes but are more common in females. It may occur at a younger age in India than in the West. The pharmacological interventions are expensive with limited or no cure promise, and the peak bone mass of the population can be increased significantly by appropriate and timely intervention in children. So, the public health measures that are efficacious, safe and cost-effective, must be adopted for the population at large. This calls the attention of the physicians of all the systems of medicine including Greek-o-Arabic (unani) system. Although, there is no description of osteoporosis in Greek-o-Arabic (unani) classical literature yet, the debility of body organs including bones is widely discussed. It is generally said that 'prevention is better than cure', so a specific prevention plan must be structured as per Greek-o-Arabic norms. Nevertheless, before making the prevention plan one must understand the Greek-o-Arabic etio-pathology of the disease. Therefore, this work is an attempt to understand the underlying causes and risk factors of osteoporosis, and to construct a mighty prevention plan. To keep the Greek-o-Arabic spirit alive, the typical Greek-o-Arabic terms are not translated into English.

Keywords : osteoporosis, asbab, su-e-mizaj, su-e-tarkeeb, tafarruq-e-ittesal, mahiyat-al-marzi.

I. Introduction

Who defines osteoporosis as "The bone density that falls 2.5 standard deviation below the mean for young healthy adults of the same race and gender (also referred to as a T-score of -2.5)"1. According to WHO, osteoporosis is second only to cardiovascular disease as a global health care problem2. Worldwide, lifetime risk for osteoporotic fractures in women is 30-50%, in men risk is 15-30%3. One out of eight males and one out of three females in India suffers from osteoporosis, making India one of the largest affected countries in the world4. Experts say the number of osteoporosis patients is approximately 26 million (2003 figures) with the numbers projected to increase to 36 million by 20135.

Realizing the burden of this disease on health professionals, the Greek-o-Arabic classical literature was explored in the light of modern etiological parameters, so that the exact pathology of the disease can be understood. This etiopathogenesis was availed to construct the Greek-o-Arabic prevention plan of the disease.

Causes of osteoporosis in Greek-o-Arabic (unani) medicine

Asbab (causes): According to Ibn Sina, there are four *asbab* (causes) of all the diseases namely *asbab-e-maddi, asbab-e-souriya, asbab-e-fayeliya and* asbab-e-tamamia6.

a) Asbab-E-Souriya

These are the *asbab* related to *Mizaj, Quwa* and *tarakeeb*

Mizaj: While discussing the causes of weakness of members (*aza*), Ibn Sina mentioned *su-e-mizaj* (persi-stent intemperament) as an important factor. He says "The causes of weakness of members include the per-sistent intemperament especially the cold one while the hot intemperament although enfeebles and benumbs an organ by corrupting the temperament of pneuma (rooh). Dry intemperament prevents the faculties from pen-etrating the organ by becoming thick. "Moist intem-perament produces weakness by relaxing the organs and obstructing the passage".

As the patients of osteoporosis do not show the signs of dominance of any *khilt*, therefore this *su-e-mizaj* must be *su-e-mizaj sada*. The primary qualities like cold and dryness show the properties of retention and holding and in this disease there is increased porosity of bones due to excessive depletion of bone mass, therefore, this *su-e-mizaj* must be *su-e-mizaj haar* or *su-e-mizaj ratab* or may be *su-e-mizaj haar ratab*.

Quwa: Poor nutrition and malabsorption are the definite causes of Ca and vitamin D deficiency predisposing osteoporosis1. This indicates that there is a malfunction of *quwwat-e-ghazia* in such a way that the *quwwat-e-jaziba, masika*, and *hazima* become weaker and *quwwat-e-dafia* becomes stronger than normal. The genetic factors are the major determinants of peak skeletal mass and density. Peak bone mass is often lower among individuals with a family history of

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osteoporosis1. Studies have suggested that a major genetic component responsible for bone mass may be linked to polymorphism in the gene for vitamin D receptor (VDR)7. This genetic predisposition of osteoporosis indicates that there must be some dysfunction of *quwwat-e-tanasuliya* that manifests as this disease.

Tarakeeb: An attenuation of texture (*su-e-tarkeeb*) of the constituting fibres of an organ leads to weakness of the organs. Ibn Sina says in this context, "the looseness of the texture in the fibres of an organ leads to weakness. Special feature of this is that the person has no pain or discomfort"6.

Hence, *su-e-tarkeeb* is one of the important causes of osteoporosis in which the micro-structure of bones is disrupted without any pain or discomfort.

b) Asbab-E-Maddiya

These include the *arkan*, *arwah, akhlat* and *aza:*

Arkan (ustuqissat): Ibn Sina says in *Al-Qanoon* that "the physicians must learn from physics that the primary elements are four and no more"6. These are *arz, maa, hawa* and *naar* as proposed by Aristotle. Each of these *arkan* bears the primary qualities and show specific characteristics. Ibn Sina says "in nature, the earth serves the purpose of making the objects firm and stable. Water has its being in the universe so that moulding of forms, shaping of coutures and attempering may become easy. In nature the purpose of air is to impart porosity, lightness and ability to rise upward". Hence, the cause of increased porosity of bones in osteoporosis may be because of the dominance of *ustuqis-e-hawa* (air) in the human body.

Arwah: Intemperament, dissipation or dispersion of pneuma can cause weakness of organs. It can occur by itself, following any kind of depletion, fever, pains or by foul smell, putrid water, and diffusion of poisonous effects in air6.

Akhlat: There is a strong correlation between *akhlat-e-moharrika* (hormones) and osteoporosis. Bone remodelling is regulated by several circulating hormones including oestrogens, androgens and parathyroid hormone. In addition, estrogen receptor α (ERα) gene polymorphisms may also be associated with BMD in Indian women and may influence some determinants of bone metabolism resulting in accelerated age related bone loss8.

Estrogen deficiency causes bone loss by activating new bone remodelling sites and increasing bone reabsorption by osteoclasts. Thus, in the estrogen deficient states as menopause, bone loss is increased. In males, it is associated with testosterone deficiency. Hyperparathyroidism bone reabsorption is increased leading to bone loss and decreased BMD.

Aza: In osteoporosis, *Aza-e-mufrida-izam* (bo-nes) are diseased and become light, porous and liable to fractures. In this disease *quwwat-e-ghazia* is weak-ened indicating *zof-e-jigar* and its *aza-e-khadima*. Weak-ness of *quwwat-e-tanasulya* indicates the dysfunction of *khusyatain.*

c) Asbab-E-Fayeliya

These causes are divided into two groups:

1) *Asbab-e-sitta zaruria*

These are six essential factors of life

i. *Hawa*

Faasid hawa is one of the important causes of dissipation of pneuma and intemperament of members making them weak.

ii. *Makool-wa-mashroob*

Mal-nutrition or low dietary intake of Calcium, phosphorous, vitamin D, K and C is the main cause of osteoporosis. Also low protein intake is associated with lower peak bone mass during adolescence and lower BMD in elderly. Modest vitamin D deficiency [25-hydroxyvitamin D levels <50nmol/L] leads to compensatory hyperparathyroidism and is an important risk factor for osteoporosis and fractures1.Peak bone mass may be impaired by inadequate calcium intake during growth, leading to increased risk of osteoporosis in later life. In adults, insufficient calcium intake induces secondary hyperparathyroidism and increases the rate of remodelling of bones. Excess of alcohol (>2units/day) especially in younger age group increases the risk. Some studies indicate that soft drinks containing phosphoric acid may increase the risk of this disease1. Thus, it can be said that *ghiza-e-qalil-al-taghzia, radi-al-kaimoos* is the cause of osteoporosis.

iii. *Harkat-wa-sukun badani*

Physical inactivity such as prolonged bed rest and paralysis results in significant bone loss1. This indicates that *sukun-e-badani mufarrat* is one of the important factors of osteoporosis.

iv. *Istafragh-wa-ehtibas*

In renal diseases, kidney can't properly generate calcitriol from calcidol which is the storage form of calcium. This increases the excretion of calcium in urine. Thus, i*stafragh-e-ghair tabayi* increases the risk of osteoporosis.

2) *Asbab-e-ghair zaruria*

These are discussed below:

i. *Mulk Wa Balad*

While osteoporosis can occur in all the countries of the world, Europeans and Asians are more commonly involved.

ii. *Jins*

This disease can occur in males but females are more commonly involved.

iii. *Asnaan*

Osteoporosis is the disease of *sinn-e-kahulat* commonly occurring between 50-70 years of age.

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iv. *Adaat*

Smoking over a long period has detrimental effects on bone mass. These effects may be mediated directly by toxic effects on osteoblasts or indirectly by modifying estrogen metabolism, likewise chronic heavy drinking of alcohol predispose to osteoporosis.

v. *Umoor-e-ghariba*

Advia (drugs) like glucorticoids, anti convulsant, l-thyroxine, anti-coagulants, proton-pump inhibitor and thiazolidinediones when administered may decrease bone mass. Amraz like endocrinal disorders, malabsorptions, rheumatological disorders, haematological disorders and genetic diseases predispose osteoporosis.

d) Asbab-e-tamamia

In osteoporosis *fail-e-taghzia* of *izam* is deranged leading to porosity and weakness of bones.

i. *Mahiyat-al-marzi (pathogenesis)*

Osteoporosis is the disease of izam (bones). In the beginning there is *su-e-mizaj haar ratab sada* and *tahlil-e-ruh* due to various *asbab*, leading to *zof-e-jigar*. This manifests in *zof-e-quwwat-e-ghazia*. The weakness of *quwwat-e-ghazia* lead to inadequate bone formation while *quwwat-e-dafia* increases the bone reabsorption resuting in decreased peak bone mass. This condition manifests in *su-e-tarkeeb.* In osteoporosis not only the bone density is decreased, but the micro-archtechture of bone is also distrupted. The weaker spicules of trabecular bone breaks resulting in "Microcracks". This is an obvious form of *tafarruq-e-ittesal-e-dakhili*. Such porous bones get fractured easily on fall causing *tafarruq-e-ittesal khariji*.

ii. *Prevention plan (Tahaffuz)*

The Greek-o-Arabic prevention plan of osteoporosis is made keeping the causative factors in mind. The salient features of this plan are discussed below:

Living at a place with proper ventilation and adequate supply of healthy air (*hawa-e-jayyadul jawahar)* devoid of any pollution.

Taking balanced diet containing all the essential nutrients including vitamins and minerals in adequate amount i.e. taking *ghiza-e-kaseer-al-taghzia jayyad-al-kaimoos* like *maul lahm*, *beza neem barisht* and *lahm-e-tayyur*. Avoiding all the junk foods, cold drinks and alcohol beverages will also help.

Achieving a higher peak bone mass in adolescent is possible by exercise. jogging, walking or stair climbing at 70-90% of maximum efforts three times a week may increase bone density by 5% in 9 months i.e. maintaining the level of *hakat-wa-sukun badani tabayi* is beneficial. Epidemiologic data reveals that when exercise is initiated in adult life the peak bone mass increases by 1-2% in <2 years duration. But, excess physical activity can cause damage to bones. Many marathon runners developed severe osteoporosis in later life. In females, heavy exercise can lead to decreased estrogen levels predisposing osteoporosis.

Quitting bad habits like smoking and alcohol drinking. Avoiding the *muzir advia* and curing the *muzmim amraz* in time can slow down the progress of the disease.

Taking Greek-o-Arabic (unani) calcium preparations orally like *kushta sadaf* (50mg OD) and *khamira marwareed* (4gm OD) can provide organic calcium which may be helpful in preventing the disease.

II. Conclusion

After above discussion, now the Greek-o-Arabic definition of osteoporosis can be presented

"Osteoporosis *(takhalkhul-e-izam)* is that *marz-e-murakkab* of *izam* in which *su-e-mizaj, su-e-tarkeeb* and *tafarruq-e-ittesal* occur simultaneously but gradually, leading to *takhalkhul* and *zof* making them liable to *kasar*". Its various causes are *ghalba-e-unsur-e-hawa, su-e-mizaj haar ratab, qillat wa kasrat-e-akhlat-e-moharrika, zof-e-jigar and khusyatain, fasad-wa-tehlil-e-ruh, zof-e-quwwat-e-ghazia wa tanasulya and nuqsan-e-fail-e-taghzia-e-izam* etc. it's *asbab-e-badia* (environmental causes) are *faasid hawa*, *ghiza-e-qalil-al-taghzia, radi-al-kaimoos, sukun-e-badani mufarrat, istafragh-e-ghair tabayi, balad-e-maghrabi, jins-e-moannas, sin-e-kahulat and adviyat* and *muzmin amraz*.

Its *mahiyat-al-marzi* includes the *su-e-mizaj haar ratab sada* and *tehlil-e-ruh*. That results in *zof-e-quwwat-e-ghazia wa tanasuliya* followed by *su-e-tarkeeb* leading to *tafarrq-e-ittesal dakhili* making the bones liable to *kasar*.

This disease can be prevented by residing in *hawa-e-jayyad al jawahar*, eating *ghiza-e-kaseer-al-taghzia jayyad-al-kaimoos*, maintaining the *tabayi* level of *hakat-wa-sukun badani*, and by taking Greek-o-Arabic calcium supplements.

References Références Referencias

1. Harrison's principles of internal medicine vol. II (2005), Kesper, Braunwald and Fauci, et al, pp-2268-2278
2. "Boning uo on osteoporosis", India Times, 2004-http:health.indiatimes.com/articleshow/329953.cms.
3. Randell A, Sambrook PN, Nguyen TV, et al (1995), Direct clinical and welfare costs of osteoporotic fractures in elderly men and women, osteoporos Int 5:427.
4. http://www.outlookindia.com 2004-5.
5. Osteoporosis Society of India (2003) Action Plan Osteoporosis: Consensus statement of an expert group. New Delhi.
6. Shah, M.H., The General Priciple of Ibn Sina's Cannon of Medicine, Idara Kitbul Shifa New Delhi 2007 p-19, 22, 211

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7. Lo CW, Paris PW, Holick MF. Indian and Pakistani immigrants have the same capacity as Caucasians to produce vitamin D in response to ultraviolet irradiation. Am J Clin Nutr 1986; 44:683-5
8. Mitra S, Desai M, Ikram M. Association of estrogen receptora gene polymorphisms with bone mineral density in postmenopausal Indian women. Mol Genet Metab 2006; 87 : 80-7.

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Assessment of Knowledge of ICDS Women Beneficiaries in District Budgam of Kashmir Region Regarding Prenatal Care

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Abstract - Prenatal care is universally considered important for women and children. This study aims to assess the knowledge of women beneficiaries of ICDS centres related to prenatal care belonging to district Budgam of Kashmir region. Nursing mothers (NM), Pregnant women (PW) and Mother of children beneficiaries (MCB age 6 months-3years) were included to assess and compare the their awareness levels. A total of 600 women beneficiaries were randomly selected from four blocks of district Budgam (150 from each block). The results of the study revealed that majority (79.1%) of the respondents were aware of the importance of medical consultation during pregnancy and about 48.6% were fully aware with appropriate time of consultation. Almost all respondents were aware of weight monitoring during pregnancy but not about its significance. Respondents were also aware about the doses and time schedule of TT vaccination during pregnancy. Basic pre-natal care components are effective means to prevent range of pregnancy complication and reduce maternal mortality. The findings indicate that there is need for enhancement of intervention educational programme in ICDS regarding importance of prenatal care and service for the healthy birth outcome and mothers' well being.

Keywords : *awareness, prenatal care, pregnancy, ICDS, Intervention.*

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Assessment of Knowledge of ICDS Women Beneficiaries in District Budgam of Kashmir Region Regarding Prenatal Care

Rajni Dhingra [α] & Iffat Ghani [σ]

Abstract - Prenatal care is universally considered important for women and children. This study aims to assess the knowledge of women beneficiaries of ICDS centres related to prenatal care belonging to district Budgam of Kashmir region. Nursing mothers (NM), Pregnant women (PW) and Mother of children beneficiaries (MCB age 6 months-3years) were included to assess and compare the their awareness levels. A total of 600 women beneficiaries were randomly selected from four blocks of district Budgam (150 from each block). The results of the study revealed that majority (79.1%) of the respondents were aware of the importance of medical consultation during pregnancy and about 48.6% were fully aware with appropriate time of consultation. Almost all respondents were aware of weight monitoring during pregnancy but not about its significance. Respondents were also aware about the doses and time schedule of TT vaccination during pregnancy. Basic pre-natal care components are effective means to prevent range of pregnancy complication and reduce maternal mortality. The findings indicate that there is need for enhancement of intervention educational programme in ICDS regarding importance of prenatal care and service for the healthy birth outcome and mothers' well being.

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I. Introduction

In many developing countries ,complications of pregnancy and child birth are leading causes of death among women of reproductive age.The maternal health situation in the country has been staggering despite several changes in a rapidly evolving socioeconomic environment. The roles and responsibilities of primary care physicians have also been revised continuously in this context. Under their leadership, different cadres of health workers have been appointed to address the problem. As deadline for Millennium Development Goals (2015) is approaching, the need for improving the standard of maternal care is more than ever. In the last decade, as per the National data, health indicators including utilization of antenatal care services were as poor as 60% in rural India. Keeping in view the gap between the target and reality, National Rural Health Mission (NRHM) was launched in April 2005, to improve the rural health care delivery system and health status of the people. Accredited Social Health Activists (ASHA) were introduced at the village level for motivating the beneficiaries to utilize the antenatal care services provided by the government health facilities. Under supervision of Auxillary Nurse Midwives (ANM) and physicians at primary health care level, ASHA were planned to play the role of a connecting bridge between community and first level government health sector. These groups of health care providers, along with Anganwadi workers (AWW), build the base line of rural health services in the country. They, under the Mission, seek to provide universal access to equitable, affordable and quality maternal health care, as well as to bring about an improvement in the health status of the pregnant women belonging to underprivileged sections of the society. (Roy et al, 2013). Overall maternal mortality is much more prevalent in rural India, where the UN estimates the MMR to be 619. (Maternal Mortality in India- Report, 2008). ICDS (Integrated Child Services Scheme) is one of the centrally sponsored schemes with one of its important components of services responsible for overall improvement of health of expectant mothers by providing nutrition and health care during pregnancy and health education through their AWCs (Anganwadi centers) in collaboration with Primary Health Centres (PHC) particularly in rural areas. It delivers services at Anganwadis (AW village centres) right at the doorsteps of the beneficiaries to ensure their maximum participation. It utilises local women as honorary village level workers for delivery of the package of services (Tandon, 1993). The fact that more than 100,000 women in India are estimated to die every year from pregnancy and child birth related causes reinforces the importance of ensuring that all pregnant women receive adequate antenatal care during pregnancy and that deliveries takes place under the supervision of trained medical personnel in a hygienic environment. Antenatal care provide an opportunity for a variety of preventive intervention during pregnancy, including tetanus toxoid injection and educating women about nutrition, safe delivery and post partum care. (Swamy et al, 1993). An assessment of composite measure for antenatal care utilization was undertaken by Bloom, Lippeveld and

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Wypiji (1999) at Varanasi, Uttar Pradesh, India. Results showed that demarcating women's antenatal care status based on a simple indicator — two or more visits versus less — marked a large amount of variation in care received. Logistic regression analyses were conducted to examine the effect of antenatal care utilization on the likelihood of using safe delivery care, a factor known to decrease maternal mortality. After controlling for relevant socio-demographic and maternity history factors, women with a relatively high level of care had an estimated odds of using trained assistance at delivery that was almost four times higher than women with a low level of care. Similar results were obtained for women delivering in a health facility versus at home. This strong positive association between level of care obtained during pregnancy and the use of safe delivery care may help explain why antenatal care could also be associated with reduced maternal mortality. In another study, it was found that women attending ANC (Antenatal care) at least twice were more likely to have a live birth. Women attending for two ANC visits (but not more than two) were more likely to have a healthy weight baby (Brown et al, 2008). Another such study in India assessed that the characteristics of sample households for pregnant women were broadly in proportion to the characteristics of the all Indian population. About 89% of the pregnant women availed visits of which 62% has received three or more ANC visits. Those receiving the second dose of TT or booster dose were about 78%. About 73% of the pregnant women received IFA tablets during their pregnancy. About 53% of the pregnant women had full package of ANC i.e availed three or more ANC visits, both the doses of TT/ booster and IFA tablets. The proportion of pregnant women who availed full ANC package was lower in rural areas as compared to urban areas, higher for literate women as compared to illiterate women. The proportion of institutional deliveries managed by hospitals and health centres was about 41%, it being higher among literate women and in urban area (Singh and Yadav, 2009). Mothers who receive late (defined as beginning in the third trimester of pregnancy) or no prenatal care are more likely to have babies with health problems. Mothers who do not receive prenatal care are three times more likely to give birth to a low weight baby, and their baby is five times more likely to die (MCH Bureau, 2005). A study conducted in Karachi to assess the knowledge of women on obstetrical complication and care, has shown that the half of the sample population (married women of reproductive age) had no antenatal care in their last pregnancy and 75% of them delivered at home. It was also indicated in the findings that the women were having poor knowledge on pregnancy related complication. Only 5% of the women perceived absent / decreased fetal movements as a danger sign of pregnancy, other reported danger signs included premature uterine contraction by 3%, premature rupture of membrane by 3% and convulsion by 13% (Hassan and Nissar, 2002) prenatal care benefits all expecting mother and their unborn. Rather than decreasing, rates of low birth weight (LBW) babies and preterm births have risen and are now the highest they have been in more than three decades. Babies born too small or too early are at higher risk for death and for both short and long term health problems (Swamy et al, 2008).

a) Turmoil and Antenatal Care

Children exposed to negative shocks in-utero, or early in life, have higher mortality rates, lower birth weights and are shorter for their age. These shocks can include recessions, famines, droughts, and disturbed conditions. A new dimension to these external shocks are armed conflict. Kashmir province in J&K State has witnessed armed conflict since 1990. Official census reports (Census of India 2001, 2011) and reports based on the National Family Health Survey (NFHS-1997) draw a positive picture for the entire state of Jammu and Kashmir in terms of mortality rates, fertility and vaccination programmes etc. However, during pregnancy the access to health services including vaccinations, prenatal and antenatal care, and micro nutrients needed for the foetus development, is usually limited because of armed conflict. Stress experienced by expecting women due to disturbed socio-political environment during pregnancy changes the production and distribution of hormones, including intrauterine growth hormones.In addition, stress can also reduce the gestation time of the foetus. In a study, it was also revealed that exposure to violence in utero and early in life has adverse impacts on children's age–adjusted height (z-scores). It was found that children more affected by the insurgency were 0.9 to 1.4 standard deviations smaller compared with children less affected by the insurgency. The effect was found stronger for children who were born during peaks in violence. A robust finding in the health literature is that shorter children perform worse in schools, in jobs and are sicker throughout their life (Parlow, 2012).

Addressing maternal health means ensuring that all women receive the care they need to be safe and healthy throughout pregnancy and child birth. Prenatal care is an essential first step in child's life. Children and the unborn have a special place in all societies and their needs are frequently considered a high priority, but in reality their needs may frequently, for various reasons go unnoticed. One reason among them is the poor knowledge of pregnant women regarding the care or antenatal care which may directly affect an unborn child. The major components of prenatal care include the diagnosis and treatment of any health complication counselling about diet, avoidance of drugs etc. Comprehensive prenatal care may prevent complications of pregnancy, which can have life time

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effects and reduce premature labor and neonatal mortality. Keeping above factors in view the present study was taken with the purpose to determine the knowledge of women beneficiaries related to prenatal care with the objectives.

II. Objectives of the Study

The present research was undertaken with following objectives.

- To study the extent of knowledge among sample women beneficiaries of ICDS belonging to rural areas of district Budgam regarding prenatal care.
- To compare the knowledge level related to prenatal care among woman beneficiaries across groups (Pregnant woman, Lactating mothers and mothers of child beneficiaries) related to prenatal care.

III. Methodology

The sample comprised of 600 registered women beneficiaries of AWCs out of which 150 were nursing mothers, 150 were pregnant women and 300 were mothers of child beneficiaries (age group 6months-3years). Data was collected in the year 2011 from January2011-June 2011.

a) The Sample

The sample has been drawn from Kashmir, an area affected by armed conflict has been selected for this study.Among the districts, Budgam has been selected for the study which has eight blocks and about 593 villages. The total population of the district is 7.35 lacs with gender ratio 0f 830/1000 and literacy rate 57.98% (2011). Out of eight blocks of district Budgam, sample was collected from four blocks (Budgam, Nagam, Chadoora and B.K.Pora) in a representative manner. For sampling a list of Anganwadi centres (AWCs) was obtained from the office of Project Officer of ICDS of each block.After obtaining the list of Anganwadi centres from each block,the centres were selected by random sampling technique using lottery method. The maximum number of child beneficiaries in the age group 6months-3years registered in an AWC is 25 which can vary depending upon the population covered under the centre.Out of 25,only 5 mothers of child beneficiaries were purposively selected from the each AWC from the attendance register maintained for this group of beneficiaries.Similarly the maximum number of nursing mothers and pregnant women registered in an AWC is 06,but the number of both the groups of beneficiaries is not always equal.For the present study a total of 5 women beneficiaries from both the groups were purposively selected from the attendance register maintained by the AWW.Beneficiaries having children in the age group (0-6months) fall in the category of nursing mothers, whereas, beneficiaries having children in the age group (6months-3years) were considered as mothers of child beneficiaries.

b) Tools Used

In order to collect the data a self devised Interview Schedule.

i. *Interview Schedule*

After going through different review material, an Interview Schedule was prepared which was pretested on 25 women beneficiaries belonging to all finalised.

The interview schedule comprised of

a. General Profile of respondents.
b. Pregnancy and Prenatal care.
   i. Consultation during pregnancy.
   ii. Appropriate timing for consultation.
   iii. Knowledge about weight monitoring.
   iv. Vaccination and its importance during pregnancy.

c) Procedure of data collection

The data was collected by visiting the beneficiaries either at home or at AWC whichever was feasible for them.Before approaching the beneficiaries AWW of concerned area was informed who also helped in locating the beneficiaries and sometimes accompanied the researcher while collecting data.

IV. Results and Discussion

The results of the present study have been discussed under three categories

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Table 1 : Knowledge related to consultation during pregnancy

Demographic Character	Pregnant (PW) (n= 150)		Nursing (NM) (n=150)		Mothers (MCB) (n=300)		All Beneficiaries (n=600)		χ^2 Analysis
	f	%	f	%	f	%	f	%	
(a) Consultation During Pregnancy									
Private clinic	24	16	25	16.6	40	13.3	89	14.8	10.8_6
Mid- wife	--	--	--	--	2	0.66	2	0.3	
PHC / Hospital	124	82.6	115	76.6	234	78.0	473	79.1	
No consultation required	2	1.3	10	6.6	24	8.0	36	6.0	
Total	150	100.0	150	100.0	300	100.0	600	100.00	
(b)Appropriate Time for Consultation									
From beginning	84	56.0	76	50.6	131	43.6	291	48.6	14.0_{6*}
II Trimester	48	32.0	42	28.0	94	31.3	184	30.6	
IIItrimester	16	10.6	22	14.6	51	17.0	89	14.8	
Not Necessary	2	1.3	10	6.6	24	8.0	36	6.0	
Total	150	100.0	150	100.0	300	100.0	600	100.0	
(c)Knowledge about significance of weight Monitoring									
To Check growth of foetus.	46	30.6	50	33.3	89	29.6	185	30.8	1.7_6
To control weight	16	10.6	20	13.3	37	12.3	73	12.1	
Advised by AWW	1	0.6	1	0.6	1	0.3	3	0.5	
Unaware about its significance	87	58.0	79	52.6	173	57.6	339	56.5	
Total	150	100.0	150	100.0	300	100.0	600	100.00	

Column percentage ** denotes highly significant $p \leq 0.01$,*Significant $p \leq 0.05$ df is in subscripts of x^2 values

Pregnant women absolutely need good prenatal care.It is essential to ensure not only the health of mothers,but also the health and well being of the baby.The first prenatal visit starts at one month and continues till delivery as per the doctor's advice.Table-1 (a) reveals that majority of selected Kashmiri respondents (79.1%) were in favour of medical consultation during pregnancy either at Primary Health Centre or Government Hospital,whichever was easily accessible to them ,while as only small proportion(6%) did not find it necessary to consult a doctor during pregnancy .Statistically no significant difference ($p>0.05$) was observed among the groups.

With respect to awareness regarding appropriate time for consultation during pregnancy, it is clear from table (b) that majority (48.6%) of the Kashmiri beneficiaries under study were of the opinion that first prenatal visit should be started from the first trimester.Some (14.8%) women beneficiaries found it safe to start consultation in III Trimester if it is second pregnancy or if there is no complication or problem faced by pregnant women. The difference among the groups was statistically found significant ($p<0.05$).

Gaining weight is a positive sign that you are giving your baby what it needs to develop. There are two reasons for the weight gain during pregnancy, to nourish the developing foetus and to store up reserves for

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breastfeeding. For awareness regarding importance of weight gain, table (c) reveals that out of entire rural sample population from Kashmir majority (56.5%)were unaware about the significance of weight monitoring,while as a good percentage (30.8%) was also found fully aware of its significance,Ithough such difference in groups was statistically found insignificant.($p>0.05$).

Table 2 : Vaccination During Pregnancy

Variable	Pregnant (PW) (n= 150)		Nursing (NM) (n=150)		Mothers (MCB) (n=300)		Total (n=600)		χ^2 Analysis
	f	%	f	%	f	%	f	%	
Awareness about T.T vaccine during pregnancy									
Once during pregnancy	4	2.6	--	--	7	2.3	11	1.8	59.3_4**
Twice	127	84.6	97	64.6	148	49.3	372	62.0	
Thrice	19	12.6	53	35.3	145	48.3	217	36.1	
Total	150	100.0	150	100.0	300	100.0	600	100.0	
Doses of TT to be given									
Each dose in each Trimester	20	13.3	22	14.6	58	19.3	100	16.6	6.6_4
All doses in first two trimester	92	61.3	84	56.0	149	49.6	325	54.2	
All doses in 2nd two trimester	38	25.3	44	29.3	93	31.0	175	29.0	
Total	150	100.0	150	100.0	300	100.0	600	100.0	
Importance of TT									
Prevents infection	19	12.6	23	15.3	34	11.3	76	12.7	7.7_6
Safety of mother& child.	40	26.6	27	18.0	81	27.0	148	24.6	
Safety of Child only	3	2.00	6	4.0	15	5.0	24	4.0	
As per Doctor's advice	88	58.6	94	62.6	170	56.6	352	58.6	
Total	150	100.0	150	100.0	300	100.0	600	100.0	

Column percentage df is in subscripts of x^2

*denotes significant $p<0.05$, **denotes highly significant $p<0.001$

Vaccination is considered to be essential during pregnancy to give protection against infection to both foetus and the mother.Data from the table 2(a) reveal that all the Kashmiri rural women under study were aware that Tetnus Toxoid (TT) vaccination is to be taken. Only a small percentage (1.8%) of women beneficiaries were unaware about the importance of TT vaccination because they had taken only one dose of TT because of carelessness or lack of awareness about its importance during pregnancy.There was a highly significant difference among the groups statistically ($p<0.000$).

Similarly with reference to knowledge of selected Kashmiri rural women regarding the doses of TT given during pregnancy it is clear from the table(b) that majority(54.2%) women beneficiaries believed that all doses should be given in the first two trimesters.16.6% were of the opinion that each dose should be given in each trimester.No significant difference in knowledge among the groups was statistically found ($p>0.05$).

Further it is observed from table(sec-c) that although all the Kashmiri rural women were aware about TT vaccination during pregnancy, but the majority (58.6%) was not aware about the reasons for importance of TT during pregnancy. Only a small proportion (12.4%) of respondents were fully aware about importance of TT. All the groups were almost equally aware about its importance with no significant difference in knowledge among the group ($p>0.05$).

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V. Summary and Conclusion

The findings reveal that the knowledge of respondents about maternal health care, including the number and timing of antenatal and pre natal care was moderate, but there were still many aspects of pre natal care where the knowledge was lacking and in which respondents need to be made aware of. These included doses of Tetnus Toxoid and significance of weight monitoring.

Table; 3 presents the comparison between previous studies and the present studies in this area and the present research conducted on rural women in a remote district affected by armed conflict.

Table 3 : Comparison between Previous and Present Study

Name,Year and Place	Previous Studies	Present Study
el-Sherbini AF,el-Torkey MA, Ashmawy AA,Abdel-Hamid HS(1993)Assuit Egypt Ishra and Fatin (2012)Iraq,Baghdad Hasnain S and Sheikh NH(2007)Lahore, Pakistan Mattos et al (2005)Brazil	• 30.5% were aware about prenatal care (PNC) • 25% lacked basic & essential knowledge • 50% of PW were having inadequate knowledge about PNC. • 32% of women were having poor knowledge about TT vaccination. • Out of total sample 2.8% were not aware about PNC. • 92.1% were well aware about importance of TT vaccination.	• 48.6% were aware about PNC. • Only 6% sample women were having no knowledge regarding PNC. . • 62% Kashmiri sample women were well aware about TT vaccination. • 24.6% women beneficiaries from sample Anganwadi centres of district Budgam were well aware about importance of TTvaccination. • 58.6% unaware about importance of TT vaccination.

Better understanding of various aspects of antenatal care must be ensured by ICDS workers and Health care workers at grass root levels for improving the foetal and maternal health indicators. The results of the study point to need for enhanced efforts on the part of ICDS workers for aiming at educational intervention for women beneficiaries of ICDS centres.

References Références Referencias

1. Brown, C.A., Sohani SB., Khan, K.., Lilford, R.. and Mukhueama W (2008). Antenatal Care adn prenatal outcomes in K Wale districxt, Kenya. BMC Pregnancy and Child birth 8:2. Doi:10.1186/1471-2393-8-2.
2. Bloom. S.S., Lippeveld T,and Wypi D (1999). Does Anetnatal Care make difference to safe delivery? A study in urban Uttar Pradesh, India. Health Policy Plan: 14 (1):38-48. Pregnancycare-www.pregnancy care.eu/pregnancy/antental-care
3. El-Sherbini., AF,., El-Torkey, M.A.,,.., Ashmawy,, A.A., Abdel Hamid, H.S,.(1993).Assessment of Knowledge, Attitude and Practices of expectant mothers in relation to antenatal care in Assuit government. Journal of Egypt Public Health Assoc:68(5-6):539-65
4. Hasnain S and Sheikh NH (2007) Causes of low Tetnuus Toxoid vaccination coverage in pregnant women in Lahore district, Pakistan, East Mediterr. Health Journal:13(5)1142-52
5. Hassan TJ & Nissar (2002) Journal of Pakishtan Medical Association; 75 (10) Available from: URL:http://www.pubmed.com
6. Ishraq, F.S and Fatin AM (2012.)Assessment of pregnant womens' knowledge and practices concerning prenatal care who attent primary health care centres in Baghdad city .Iraqi National Journal of Nursing Specialities:25(Spl issue)
7. Parlow, A. (2012).Armed conflict and children 'Health Exploring new directions: The case of Kashmir HICN (Household in Conflict Network) the Institute of Developmental Studies. University of Sussex Available at;www.hicn.org (working paper-19)
8. Roy, M.P.,, Udhay, M.,, Singh, S.K,,. Singh, V.K and Srivastava, A.K (2013). Determinants of utilization of Antewnatal care services in ruralLuckhnow, India J Fam Med Primary Care:2(1)55-59Available at:http// www.jfmpc.context.asp?2013/2/1/109946
9. Swamy, G,. Pavalavalli,M,. Kathryn, S,. Shia, O,. Pustein, d. Ties Boermanand Sommerfelt, A.E (1993). High risk births and maternity care, DHS comparative studies, No 8 Colombia, Maryland: Marco International Ive.
10. Singh, P,. Yadav, R.J (2009). Antenatal care of Pregnant women in India. India Journal of community Medicine: 25 (3)
11. Swamy, G.K,. Ostbye,T.O and SK Jaerven, R (2008) Association of preterm birth with long term survival, reproduction and next generation preterm birth.JAMA: The Journal of American Medical Association, 29 (12), 1429
12. Tandon, B.N(1993).Integrated Child Development Services (ICDS):An Assessment Bulletin of the National Foundation of India:14(1)
13. Marernal Mortality in INDIA (2008.)Centre for Reproductive Rights.
14. Available at:www.reproductive rights:ISBN:1-890671-38-X

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15. Maternal and Child Health Bureau, Health Resources and Services Adminstration, U.S. Department of Health and Human Services. A healthy start. Begin before Baby is born, (2005)
16. National Family Health Survey Subject Reports No: 5, 1997 – International Institute for Population Sciences, Mumbai, India.

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Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
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- Submitting a manuscript with pages out of sequence

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Approach:

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Approach:

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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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