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Research Article

**COMPARE & CONTRAST HISTOMORPHOMETRY
INFORMATION OF TAMOXIFEN AND NANDROLONE
DECANOATE AMONG FEMALE ALBINO RATS**¹Dr. Noreen Nafees, ²Dr. Muhammad Shiraz, ³Dr. Nadiya Tariq¹W.M.O DHQ Hospital Kasur²R.H.C Ahmad Nagar³House Officer, Holy Family Hospital, Rawalpindi**Abstract:**

Objective: The main aim of the study is to differentiate the histomorphometry information (in line with osteoporosis) by using SEM (scanning electronic microscopy). The differentiation is made between Tamoxifen used and Nandrolone deaconate used female albino rats, by means of an ingenious adjusted limitation.

Methods: We conducted this research at Mayo Hospital, Lahore from September 2016 to August 2017. An exploratory research study was conducted on animals. In this way, six rats were included which are female and Albino. The age bracket was from 8 to 12 months. According to the rules and regulation made by the Institutional Animals Ethics Committee (IAEC), this study was organized. Quality of nourishment treaty was noticed. Two groups were made for Albino rats. The rats in the group carried 3 rats. The rats in group A was treated with Tamoxifen had 5mg/kg body weight s/c daily. Whereas in group B, the rats were treated with Nandrolone deaconate and had 3mg/kg body weight, 1/M per week. The treatment time for both groups was six weeks. After treatment, rats were cut down and dissection was done. Bones of these animals were removed. By using SEM, quantitative and qualitative information was complicated.

Results: the information used in this study was of various types. This includes Specific Bone Surface, Specific Eroded Surface and Total Eroded Surface Group A; Nandrolone deaconate treated and group B; Tamoxifen treated were compared. For these two groups of Albino rats, the above mentions specifications were done by using SEM. The estimation of obtained information was done on a statistical basis. Between both groups, no valuable changes were observed.

Conclusion: The histomorphometry information indicates that Nandrolone deaconate and Tamoxifen in female Albino rats related to physical estimation like SBS, SES AND TBS/TES were similar in results.

Keywords: Nandrolone Decanoate, Tamoxifen, Histomorphometry.

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INTRODUCTION:

The most commonly found complex disease of bones. It also caused many irregularities in suffers [1]. The mass and volume of the bones are reduced by this disorder. Osteoporosis is a diverse kind of disease. There are two possibilities for these variations. The first reason is an insufficient fusion of bone matrix which comprised of the organic and inorganic fraction. Second reason is two much mislaying of these segments.

All over the world, the issue that is mostly faced by mature ladies is the involution postmenopausal Osteoporosis [2].

Commonly in the post-menopausal age, these variations are observed. The variations in bone are also related to age. All around the globe, there is a chance of 75 million ladies to be a victim of this disease according to an assessment [3]. Out of all factors, the factors that are on the top list responsible for this disease is a hormonal deficiency. It is indicated that 15% of ladies have a risk of having a vertebral fracture and 20% of ladies are found with risk of having a hip joint fracture. This chance may elevate to 25% in other areas like Scandinavia. Different factors are responsible for this like less exposure to ultraviolet. Postmenopausal is a process that is present in a section of post-menopausal ladies. It is also called Type-1 Osteoporosis [4]. It's most commonly found in women with age bracket of 51 to 65 years. Probably because of a reduced level of circulating estrogen, it may lead to a state of unhealthful and death. Since there are many unwanted reactions of estrogen replacement therapy. These reactions lead to the possibility of uterine and breast cancer.

The first strong estrogen noticed in rats in tamoxifen. Tamoxifen is a derivate of triphenylmethane (TPE). It is a synthetic non-steroid similar to estrogen. Tamoxifen acts as both estrogen and anti-estrogenic. The anti-estrogenic qualities of Tamoxifen are a result of affluent alteration of its stilbene nucleus [5].

Several situations like reproductive dysfunction, Anemia and breast cancer can be treated by using Nandrolone deaconate which is an Anabolic Androgenic steroid. It is analogous to Testosterone's structure and is a synthetic compound. The structure of Testosterone has been updated. Three main changes are made, to increase its delivery, vigour and to lessen the degradation rate. In the same way, for the maintains of skeletal mass, the significant characteristic is played by sex steroids in both rats and humans [6]. Nandrolone deaconate in an anabolic steroid. It plays role in metabolism of calcium and to

alternate the positive protein.

The density of minerals of bone and other factors such as the arrangement of bone, deformation, bone recovery and vigour may be significantly considered in order to avoid fractures. This is illustrated in the experiments related to recent therapy for osteoporosis. There is a need to enquire the estimation of bone in the treatment and therapy assessment according to the current viewpoint of various experts.

The aim of the current study was to prosper the indication of structural variations of bones in details and construct these changes. This construction was based on SEM (scanning electronic microscopy) which is ingeniously reshaped framework. The aim of this study also included appearance regarding both resorptive variations and unaltered trabecular surface. Therefore, the comparison of histomorphometry information (in line with osteoporosis) in relation with Tamoxifen treated and Nandrolone deaconate treated and Nandrolone treated females Albino rats was the main target of this research study. The comparison was done through seM.

MATERIALS AND METHODS:

We conducted this research at Mayo Hospital, Lahore from September 2016 to August 2017. In this study, six Albino rats were selected. These rats were grouped up. Two group A and B were made. The rats in group A were treated with Tamoxifen while rats in group B were treated with Nandrolone decanoate in group A and B, size of the sample was six that is left and right femur of all the six rats respectively.

In this study, rules and regulations as made by the Institutional Animal Ethics Committee were considered on serious basis for the rats. Different institutes like Research Institute of Chemistry, University of Karachi and housed in Perspex cages supplied the rats. These rats were Albino and females. The age brackets these were 8-12 months while weight 200 to 250 grams. These rats were placed in the laboratory has an environmental analogous temperature (25+_2c). according to an agreement with the Institutional Animal Ethics Committee, the diet usually present for these rats was wheat, flour, milk, powder, vitamins and supplement of minerals etc.

Two groups were made for six rats and each group has 3 rats. The Tamoxifen treated rats present in group A were provided with 5mg/kg body weight animal every day. On the other hand, the Nandrolone deaconate treated rats present in group B were

provided with 3mg/kg body wt. 1/M per week. This provision was for six weeks. These animals were slaughter as the treatment was done. After this, these rats were dissection and bones were separated. On this basic, by means of SEM, the quantitative data was evaluated.

From the Joel Japan model number JFC-1500, the sample was covered on Auto-coater with gold up to 300A. By means of SEM, the images were removed. These images were extracted from Joel Japan model JSM 6380 A. On the SEM image was taken, a virtual grid with 494 squares each square of 0.25mm/sq. Area size was overlaid. In this way, the ratio of Forded surface square was estimated. The estimation was done in the form of intertrabecular spaces to square with U unaltered trabecular surface indicated as bone surface BS (BS/ES). Hence the qualitative five estimations twelve specimens were chosen having a femoral head.

RESULTS:

Bone micro-architecture Trabeculae in this study present in femoral head was estimated. This was established by means of BS. In the same way, the arrangement of sides of plates and rods (trabecular) was assessed. Moreover, inter-trabecular spaces ascribed for resorptive variation were checked and calculated. Hence, materially, qualitative and quantitative information was developed.

Along with inter-trabecular spaces, mean trabecular length was recorded. This length was mapped out on the basis of Bone Surface. The measurement of the resorptive or Eroded surface was done by longitudinal axis calculated at six well indicated different particular loci per revelation of SEM of varies sizes 120 -300 micrometre an amplification procedure at look. In this way, Specific Bone Surface (SBS) was assessed.

In some way, as per relegation of SEM, size 120 – 300 mic. m, mean trabecular width was measured. This measurement was made at six different well-indicated particular loci. And regarding Bone Surface vertically across two compatibly present trabecular spaces=Resorptive Eroded Surface by traverse axis. Therefore, the statistical calculation was done for (BS) mean area as 6.7333. In a group this value was with STD error of mean 0.4277. In group A This value was with STD error of mean 0.4277. in group B, mean area was calculated as 6.7833 with ATD error of mean 0.6195. hence, in both groups A and B no valuable difference was noticed.

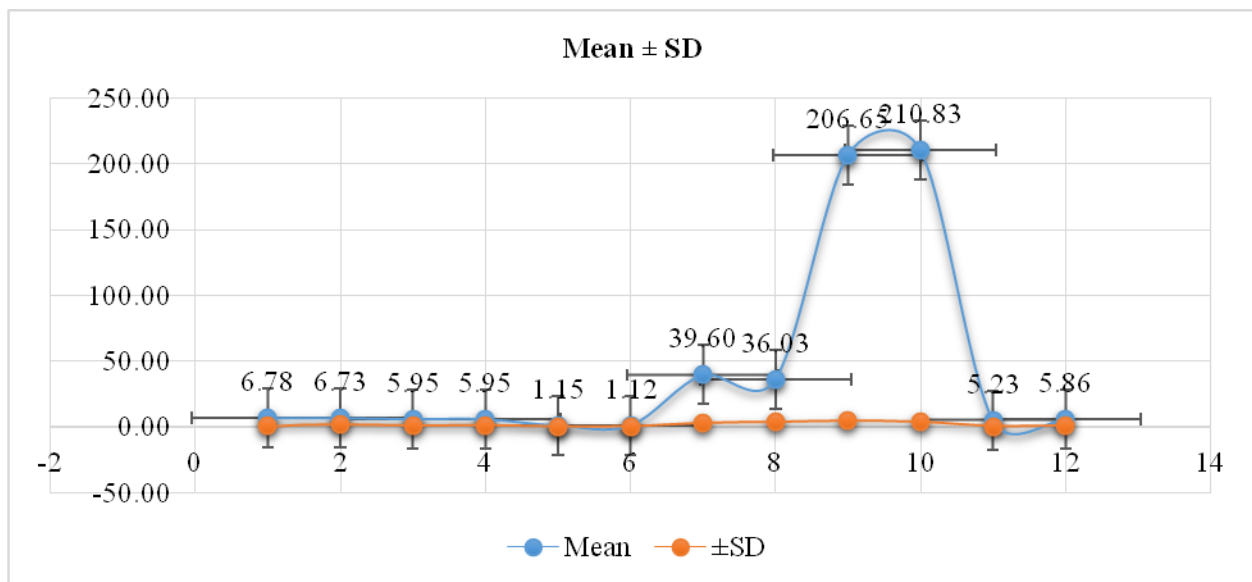
Similarly, from the trabecular space, Specific Fro deal Surface. Mean width and length of Inter-trabecular space itself was constructed. For group A, respected area calculated was 5.9500 along with STD error of mean 0.7582 while 5.9600, STD error of mean 0.4014 in group B, $p < 0.05$.

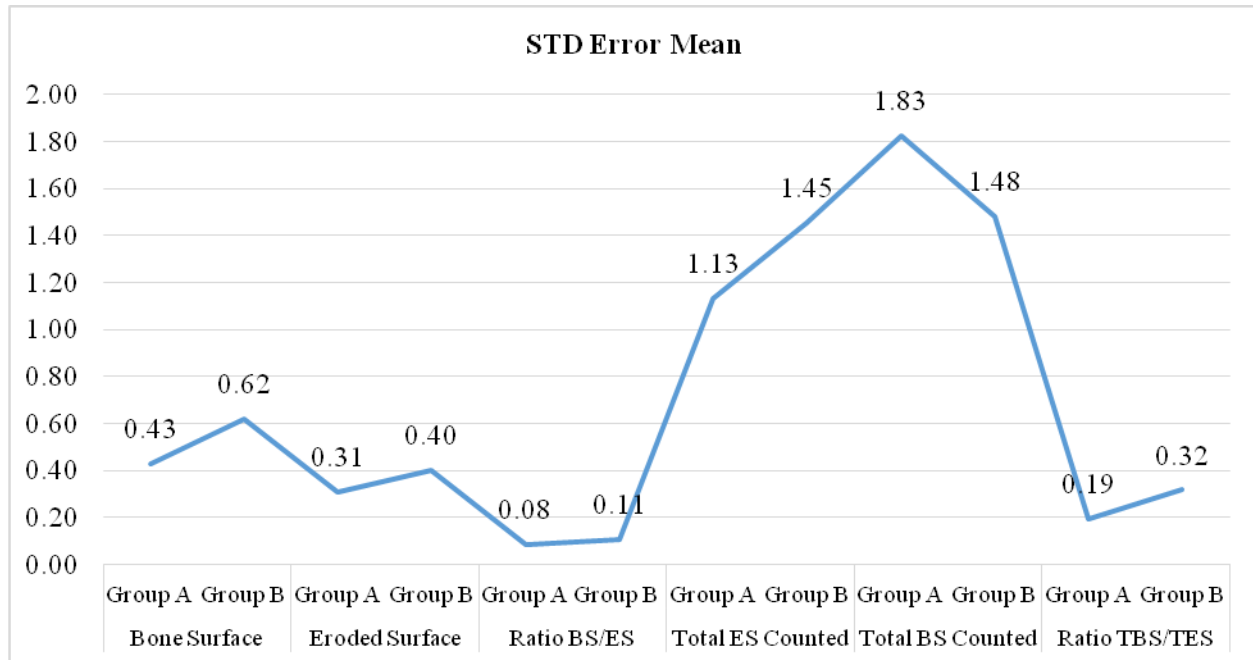
By the total Area Total bone Surface was calculated. This calculation was related to BS and ES per SEM revelation evaluated and removed mathematically 206.6500 was the total area related to BS, in group A SEM was 1.825 and 210.833 mm, 5EM 1.480 in B moreover in group A the ES was 36.0333 mm with STD error of mean 1.133 and in group B, 36.0333 with STD error of mean 1.452. Again, in both groups, $p > 0.05$.

The information was collected and assessed. By using SPSS, both groups were compared statistically. By mean of the independent t-test, these values were compared and assessed. I the six female rats, the rats with similar age and weight with sample size was twelve in total after the management of Tamoxifen 5mg/kg birth weight and Nandrolone deaconate 3mg/kg birth weight. These values were compared statistically. These values were not found valuable ($p > 0.05$).

Table: Comparison of histomorphometry data (millimetre) between Tamoxifen treated (group A) and Nandrolone Deaconate treated (group b).

Subject Groups (6)		Mean	±SD	STD Error Mean	p-value	95% CI	Upper Diff Interval
Bone Surface	Group A	6.78	1.05	0.43	0.95	-1.63	1.73
	Group B	6.73	1.52	0.62			
Eroded Surface	Group A	5.95	0.76	0.31	1.00	-1.13	1.13
	Group B	5.95	0.98	0.40			
Ratio BS/ES	Group A	1.15	0.20	0.08	0.84	-0.27	0.33
	Group B	1.12	0.26	0.11			
Total ES Counted	Group A	39.60	2.78	1.13	0.08	0.54	7.67
	Group B	36.03	3.56	1.45			
Total BS Counted	Group A	206.65	4.47	1.83	0.11	-9.42	1.05
	Group B	210.83	3.63	1.48			
Ratio TBS/TES	Group A	5.23	0.47	0.19	0.12	-1.45	0.19
	Group B	5.86	0.77	0.32			





DISCUSSION:

The basic purpose of organization of this study is to evaluate detailed description of Nanoscale material index of variation of many structures. Through SEM, these variations are constructed which is ingeniously reformed framework. It is progressed regarding both resorptive variations and unaltered trabecular surface. If the comparison is made between both the groups, this study indicated that trabecular was found moderately decreased in several point loci of ageing female albino breed in Tamoxifen treated group. Hence, there found invaluable means size of inter-trabecular gap=resorptive of the eroded surface in both of the groups. By means of SEM image, the calculation was quantified virtual grid of 594 squares. Each square was 0.25 mm expanded on overlaying image. The main centre of observation in our study has been the inter-trabecular gaps, But Gentschi G et al chose resorption lacunae for quantification [7]. Thus, for quantitative assessment, an obvious standard has been set. This study has been implemented with the trabecular bone to check its appropriateness. Trabecular bone was separated from the femoral head area of rat bone.

The density of minerals of bone and other factors such as the arrangement of bone, deformation, bone recovery and vigour may be significantly considered in order to avoid fractures. This is illustrated in the experiments related therapy for osteoporosis. To make the treatment effective, many experts now are of the view that BMD should be tried as are of the unique indication. But, still, there is a need to

consider other bone procedure in the assessment of treatment therapy. Osteoporosis connected with the dissolution of estrogen at menopause is observed as osteoclast arbitrated in females. Reduction of a man of bone, the disintegration of bone formation, bone resorption and excavation of trabecular plate is the final result [8]. Food and Drug Administration accepted some agents currently for avoidance and treatment of osteoporosis. Those factors include calcium, hormone replacement therapy, the selective estrogen receptor modulator raloxifene, calcitonin and bisphosphonates alendronate and risedronate. All of these factors stop the action of bone-resorbing osteoclasts. The capability and securing of these agents have been mentioned [9].

In spite of artfrature capability of HRT [10], long-lasting risk of coronary disease, breast cancer and pulmonary embolism have currently indicated by experts. Although major protection against osteoporosis connected with menopause is HRT. Recombinant human parathyroid hormone 1 – 34 is a remarkable addition to agents that are selected for the treatment of osteoporosis. For the purpose of marketing acceptance [11], FDA has been anaphase this anabolic agent. This agent enhances bone alteration with a considerable net increase in the formation of bone. In a trabecular network, the chance of mechanical failure can be enhanced by Resorption lacunae that care stressors. The factors FR, BS have indicated the quantification of RL previously. This quantification has been established by light microscope, But the outcomes have been

conflicting and opposing. Related to TBS and TES in both groups Trabeculae observed to be of the same size and thickness on large scale. Enhanced thickness with decreased inter-trabecular spaces and well-ordered anastomosing design in the treated group in few particular loci is illustrated by electron microscopy selection as compared to Tamoxifen treated group. The outcomes of Hamdy et al [12] are similar to our study. He with the idiopathic osteoporosis as estimated by radiology and dual energy X-rays absorption chosen various patients. These patients were provided with 50mg Nandrolone deaconate IM on weekly basis. Then on lumber spines, densitometry of bone was done and femur was left over.

CONCLUSION:

The information used in this study was of various types. This includes Specific Bone Surface, Specific Eroded Surface and Total Eroded Surface Group A; Nandrolone deaconate treated and group B; Tamoxifen treated were compared. For these two groups of Albino rats, the above mentions specifications were done by using SEM. The estimation of obtained information was done on a statistical basis. Between both groups, no valuable changes were observed. The histomorphometry information indicates that Nandrolone deaconate and Tamoxifen in female Albino rats related to physical estimation like SBS, SES AND TBS/TES were similar in results.

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