Pre And Post Treatment Bone Density And Low Backache Analysis In Patients Of Carcinoma Cervix Undergoing Chemo Radiation-An Interim Analysis Of An Ongoing Trial.

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Background & objectives- Cervical cancer is one of the leading causes of morbidity and mortality amongst the gynaecological cancers worldwide [1]. The South Asian region harbours one fourth of the burden of cervical cancer [2]. Radiation therapy (RT) forms an integral part of management of cervical cancer patients presenting in advanced stage of disease. Often, Low back ache is reported by patients on follow up post treatment. We hypothesized that pelvic radiation therapy might lead to bone mineral density (BMD) changes. Hence a prospective clinical trial to evaluate pelvic bone density changes ,if any and low back ache was sought in patients of locally advanced carcinoma cervix undergoing concurrent chemoradiation therapy (CCRT) at our institute. We hereby present an interim analysis of our study.

Patients & Methods-Updated data of 65 patients who gave informed consent and fulfilled inclusion and exclusion criteria was analysed. Pelvic bone density was assessed using Dual Energy X-ray Absorptiometry (DEXA) scan which was done pre and post (at 1 year) of CCRT. Since low back ache is a frequent symptom at the time of diagnosis of cervical cancer, and it is subjective in nature, Oswestry Low Back Pain Disability scale, which can objectively quantify the disability due to persistent low back ache is used for pre and post RT Pain and disability scoring Results were statistically analysed. Workflow pattern as depicted in Fig-1.

Fig.1-Workflow pattern.

Results-The mean pre and post RT BMDs at the radiated lumbar vertebra 5 (L5) was 0.847 and 0.691 and meanT score for radiated femoral neck (FN) was -1.586 and -1.518, respectively. Similarly at no irradiated thoracic vertebrae 12 (D12) site pre and post RT mean BMD values were -1.369 and -2.745 respectively. Results were statistically significant (p<0.001) except for FN (Table-1). Median Low back ache score for pre RT was 3 and post RT was 7.Median disability index was 28 pre RT and 38 post RT. Statistically significant(p<0.001) pain and disability score was observed (Table-2).

		Mean ± sd	z	p-value
BMD (L5)	Pre RT	0.847 ± 0.169	-5.928	<0.001*
	Post RT	0.691 ± 1.356		
D12	Pre RT	-1.369 ± 1.204	-6.523	<0.001*
	Post RT	-2.745 ± 0.168		
FN(T-score)	Pre RT	-1.587 ± 1.704	-0.534	0.593
	Post RT	-1.518 ± 1.433		

Table-1-Mean Pre and Post RT BMD values.

		Median (IQR)	Min	Max	z	p-value
Pain Score	Pre RT	3.0 (1)	1	4	-7.173	<0.001*
	Post RT	7.0 (1)	5	9		
Disability Index	Pre RT	28.0 (8)	19	38	-7.19	<0.001*
	Post RT	38.0 (8)	26	46		

Table-2-Median Pre and Post RT Low Back ache and disability scores.

Discussion-Cancer treatment induced bone loss has been studied as a distinct entity in gynaecological cancers [3].Various reports have observed increased susceptibility to fractures and bone loss in patients with cancer treatment induced osteoporosis, leading to significant impairment of quality of life [4].Park et al have considered pelvic radiotherapy to be a significant risk factor for sacral insufficiency fractures in their study [5].Baxter et al reported a 5 year cumulative occurrence rate of radiation related insufficiency fractures in approximately 8.2%. [6].Okonogi et al have reported significant reduction in mean bone mineral densities within one year of pelvic radiotherapy in both pre-menopausal and post-menopausal women [7].In spite of multiple studies independently reporting decrease in bone density changes, increase in osteoporotic fractures, and decrease in quality of life due to persistent low back ache, there have been no prospective studies reporting a significant correlation between bone density changes and persistent low back ache.

Conclusion-Though trends towards radiation related bone density changes are observed as per our interim analysis. Firm conclusion could be drawn only after completion of the trial.

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