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ASSESSMENT OF BLOOD MARKERS AFTER RADIONUCLIDE THERAPY FOR OSTEOGENIC METASTASIS OF KIDNEY AND PROSTATE CANCER

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Abstract:

In recent years, there has been a steady increase in the incidence of malignant neoplasms in all major localizations. Unfortunately, there remains a high percentage of tumors detected in stage 4 of the process in the presence of distant metastases, incl. bone metastases. Despite the improvement in diagnostic methods, the frequency of detection of osteogenic multiple metastases in prostate cancer (PC) and renal cell carcinoma (RCC) is one of the most urgent problems of modern oncourology. Skeletal metastases are very devastating for patients with renal cell carcinoma, leading mainly to osteolytic lesions that disrupt the integrity of the bone and adversely affect the outcome of the disease. Skeletal involvement in RCC is associated with skeletal events including pain, nerve compression , hypercalcemia , and even pathological fractures that may require surgery and other therapy. Although bone turnover markers are not definitive in the diagnosis of skeletal metastases, they can be very useful in monitoring patients with known primary cancers for bone metastases.

Keywords: markers, alkaline phosphatase, hematological toxicity, prostate cancer, kidney cancer, radiopharmaceutical.

RELEVANCE:

Alkaline phosphatase and TRAP are markers of osteoblast and osteoclast activity, respectively. TRAP was found to be significantly higher in breast cancer patients with bone metastases than in patients without metastases. Ozu et al . found that serum TRAP was a useful predictor of bone metastases in prostate cancer, and that the combination of TRAP, alkaline phosphatase, and PSA could eliminate bone scans in 70% of cases.

Expression of Dickkopf-1 (Dkk-1), which seems to play an important role in the regulation of bone metabolism, is increased in the early stages of prostate cancer and decreases during progression, especially with advanced bone metastases. In breast cancer patients, serum Dkk-1 is also significantly elevated in women with bone metastases. However, serum Dkk-1 measurements cannot be used alone to diagnose bone metastases from breast cancer. Understanding the pathophysiology of bone loss has led to the development of modern and novel drugs targeting specific molecular pathways.

MATERIAL AND METHODS OF RESEARCH:

The work was carried out at the Department of Oncology of the Samarkand State Medical Institute. The materials of the Republican Specialized Scientific and Practical Medical Center of Oncology (Tashkent), as well as its Samarkand branch and the branch of the city of Tashkent, were used in the work. A retro- and prospective study was carried out to improve the palliative treatment of patients with cancer of the genitourinary system with multiple osteogenic metastases.

Hematological profiles were performed according to the levels of alkaline phosphatase, CP and PSA in serum, analgesic effect, pain assessment and pain relief (complete pain relief, patient without pain, severe pain) were assessed. Under the term Pain Relief, we understood - a decrease in pain by 5 or more points from NRS during the initial treatment; mild pain relief - pain reduction by 3 or 4 points; no effect - assessment of pain without reduction and reduction 1 or 2 points). Hematological toxicity was assessed using the National Cancer Institute's total toxicity.

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64 (58.2%) patients received radiopharmaceutical therapy (samarium oxabifor) in the treatment of multiple osteogenic metastasis.

***Alkaline phosphatase*.** A decrease in serum ALP levels, 1 month after combination therapy, a decrease in the fraction of alkaline phosphatase from 8.7 ($p \leq 0.05$) was found. The table shows the level of alkaline phosphatase in serum over time. 1and 3months after treatment

Table1
Indicators of markers in dynamics

	Basal data		After 1 month		P	After 3 month		P	P
	M	s	M	s		M	s		
Alkaline phosphatase (Units/l)	873,00	11,10	413,03	111,25	0,000	260,00	63,44	0,000	0,000
Bone phosphatase (Mcg/l)	94,66	10,76	45,00	10,32	0,000	19,00	4,84	0,000	0,000
Hemoglobin (g/l)	113,00	3,87	103,00	9,63	0,000	99,00	17,10	0,000	0,282
White blood cells (109/l)	8,20	2,44	4,90	1,22	0,000	6,10	1,69	0,000	0,002
Platelet (thousand U/μl)	263,00	62,13	141,00	35,07	0,000	201,97	56,18	0,001	0,000

Hematological toxicity. One of the side effects of 153 Sm-OXABIFOR treatment is haematological toxicity. All three hematological profiles (erythrocytes, leukocytes, platelets) had decreased levels ($p \leq 0.05$). The highest rates of decrease in leukocytes and platelets were noted 1 after treatment, but after 3 months these indicators returned to normal, which confirms it as a factor that suppresses bone marrow production, while suppression of bone marrow function was mild and transient. In our case, there were no obvious signs of toxic effects.

Table 2
Hematological toxicity by stages

	Basal data		After 1 month		After 3 month		After 1 month – Basal data	After 3 month – Basal data	After 1 month- After 3 month
	M	m	M	m	M	m	Wilcoxon 's Criterion of Iconic ranks, Z		
	abs	%	abs	%	abs	%	-5,303[b]	-4,300[b]	-2,530[c]
0	18	56,25	1	3,13	5	15,63	0,000	0,000	0,011
1	14	43,75	19	59,38	20	62,50			
2	0	0,00	11	34,38	5	15,63			
3	0	0,00	1	3,13	2	6,25			
4	0	0,00	0	0,00	0	0,00			

Most patients had grade 1 or 2 infections. Bleeding was not observed within 3 months after treatment with 153 Sm-OXABIFOR. The hematological toxicity class before and 1 and 3 months after 153 Sm-OXABIFOR is summarized in the table. Therapy with Sm-OXABIFOR for the relief of bone pain in patients with prostate cancer has been shown to be effective, safe and well tolerated. Analgesic effect with simultaneous improvement of the patient's mobility and with a decrease in the required dosage of analgesics. Hematologic toxicity following

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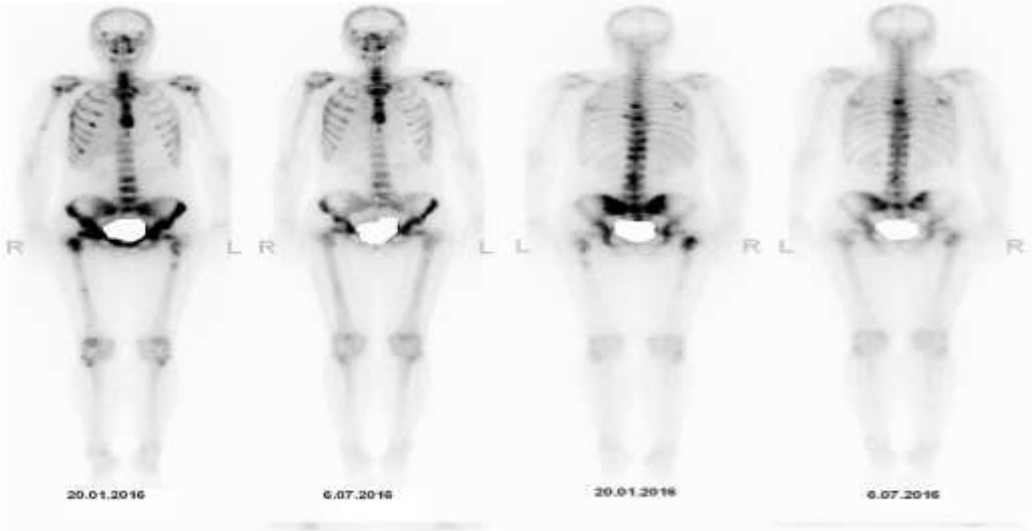
administration of 153 Sm-OXABIFOR was moderate and transient.



Pic. 1 . Image of MUGA results of osteogenic metastases of prostate cancer before and after treatment with Samarium: before (20.01.2016) and after (06.07.2016).

Contraindications for radionuclide therapy are:
1. thrombocytopenia below 100x10%; leukocytopenia below 2.5x109 /l;
2. specific anticancer therapy with myelosuppression;
3. severe general condition;
4. progression beyond bone metastasis (liver, lungs, brain, etc.);
5. severe coagulopathy;
6. Pathological fracture due to metastasis

CONCLUSION:

To improve the quality of life and reduce the occurrence of pathological fractures in patients with prostate kidney cancer, the appointment of systemic radiation therapy is indicated, which allows for a long time to stabilize the state of the skeletal system, to determine the duration of the use of bisphosphonates, and it is shown to determine the level of markers of bone metabolism.

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