
# Efficiency of Radiotherapy Treatment in Patients with Bone Metastases of Prostate Cancer and Renal-Cell Cancer


| | |
|---|---|
| **[1]Rakhimov Nodir Mahammatkulovich** | [1] Samarkand State Medical University |
| **[1]Shakhanova Shakhnoza Shavkatovna** | [1] Samarkand State Medical University |
| **[1]Sattorova Nargiza Aziz qizi** | [1] Samarkand State Medical University |
| **[2]Kalyuta Tatiana Yurievna** | [2]Saratov State Medical University Named I.V. Razumovsky |
| **[2]Velikanova Marina Gennadievna** | [2]Saratov State Medical University Named I.V. Razumovsky |
| **[2]Korolev Alexander Yurievich** | [2]Saratov State Medical University Named I.V. Razumovsky |



ABSTRACT

Data from the World Health Organization (WHO) show that about 4 million people worldwide experience pain every day due to malignant diseases; in half of these people, discomfort due to bone metastases is the dominant source of symptoms ( Pavlova N. S., Sergienko E. A., 2020; Radbruch L., 2020 ). Most patients with bone metastases develop severe pain as the disease progresses, resulting in a significant reduction in their quality of life. 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, including bone metastases. Bone metastases have a very bad impact on the patient's quality of life. In particular, bone pain is the most common type of pain caused by cancer, which may require opiate analgesics and palliative radiotherapy for pain.



**Keywords:** Radiation Therapy, 1 53-Samarium-Oxabiphor, Prostate Cancer, Kidney Cancer, Pain.


**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.

The work is based on the monitoring indicators for 110 patients with morphological verification of a malignant neoplasm of the genitourinary system with multiple bone metastases

A test of the clinical and morphological properties of the tumor process was carried out in 110 patients with renal cell carcinoma (RCC) and prostate cancer (PC) with multiple bone metastases in the bones, which were detected by various imaging methods (radioisotope bone scan (MUGA scan), computed tomography). (CT), magnetic resonance imaging (MRI)). In all 110 patients, the histological type of the tumor, the level of malignancy, variants of bone metastases, complications of bone metastases, life spans from the stage of diagnosis to the initial response to treatment and to the case of a skeletal complication were assessed.

**Results:** The general condition of the patients was assessed according to the subjective data

of the patients: physical and mental data. The change in the intake of analgesics was objectively determined by the medical staff and the patients themselves. Changes in patients' mobility depended on the sensation of pain when walking with or without support. The analgesic effect was assessed subjectively by patients, by changing their need for analgesics (constant pain, night pain, pain during movement, etc.).

**Table 1**
**Distribution of patients according to the Karnofsky scale before treatment**

| Scores on the Karnovsky scale | Nosology | | | | | | | | | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | Kidney cancer n=48 | | | Prostate cancer n=62 | | | Total | | | |
| | abs | M(%) | m | abs | M(%) | m | abs | M(%) | m | |
| 40 | 3 | 6,25 | 3,49 | 5 | 8,06 | 3,46 | 8 | 7,27 | 2,48 | $\chi_{н}^{-2}$= 16,873; p – 0,005 |
| 50 | 8 | 16,67 | 5,38 | 10 | 16,13 | 4,67 | 18 | 16,36 | 3,53 | |
| 60 | 10 | 20,83 | 5,86 | 12 | 19,35 | 5,02 | 22 | 20,00 | 3,81 | |
| 70 | 11 | 22,92 | 6,07 | 14 | 22,58 | 5,31 | 25 | 22,73 | 4,00 | |
| 80 | 12 | 25,00 | 6,25 | 15 | 24,19 | 5,44 | 27 | 24,55 | 4,10 | |
| 90 | 4 | 8,33 | 3,99 | 6 | 9,68 | 3,75 | 10 | 9,09 | 2,74 | |
| Total | 48 | 100,00 | 0,00 | 62 | 100,00 | 0,00 | 110 | 100,00 | 0,00 | |

As can be seen from Table 3.1, the main contingent of patients had a limitation of normal activity while maintaining complete independence of the patient, which amounted to 62 (56.4%) patients, 64 (58.2%) patients received radiopharmaceutical therapy (samarium oxabifor) in the treatment of multiple osteogenic metastasis. Almost all patients rated the therapy relatively positively, feeling better after adding denosumab and samarium radiopharmaceutical therapy.All analgesics were completely discontinued in only 5 (5.5%) patients, but a marked reduction in their need was evident in the majority of patients. The most obvious benefits of combination therapy were improved mobility and pain relief. The answer is best illustrated by the overall score table (Table 2).

**Table2**

| | score | Kidney cancer | | | Prostate cancer | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | abs | M(%) | m | abs | M(%) | m | abs | M(%) | m |
| *General condition* | | | | | | | | | | |
| decline | -1 | 0 | 0,000 | 0,00 | 0 | 0,00 | 0,00 | 0 | 0,00 | 0,00 |
| Without changes | 0 | 1 | 2,08 | 2,06 | 1 | 1,61 | 1,60 | 2 | 1,82 | 1,27 |
| Easy improvement | 1 | 10 | 20,83 | 5,86 | 8 | 12,90 | 4,26 | 18 | 16,36 | 3,53 |
| Good improvement | 2 | 8 | 16,67 | 5,38 | 15 | 24,19 | 5,44 | 23 | 20,91 | 3,88 |
| *analgesics* | | | | | | | | | | |
| increasing the number | -1 | 0 | 0,000 | 0,00 | 0 | 0,00 | 0,00 | 0 | 0,00 | 0,00 |
| Without | 0 | 1 | 2,0 | 2,0 | 2 | 3,2 | 2,2 | 3 | 2,7 | 1,5 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| changes | | | 8 | 6 | | 3 | 4 | | 3 | 5 |
| reducing the number to 45% | 1 | 8 | 16,67 | 5,38 | 8 | 12,90 | 4,26 | 16 | 14,55 | 3,36 |
| reducing the number to 80% | 2 | 10 | 20,83 | 5,86 | 12 | 19,35 | 5,02 | 22 | 20,00 | 3,81 |
| cessation of use | 3 | 0 | 0,00 | 0,00 | 2 | 3,23 | 2,24 | 2 | 1,82 | 1,27 |
| *Mobility* | | | | | | | | | | |
| decline | -1 | 1 | 2,08 | 2,06 | 1 | 1,61 | 1,60 | 2 | 1,82 | 1,27 |
| Without changes | -1 | 1 | 2,08 | 2,06 | 1 | 1,61 | 1,60 | 2 | 1,82 | 1,27 |
| Limited 50% | 1 | 7 | 14,58 | 5,09 | 9 | 14,52 | 4,47 | 16 | 14,55 | 3,36 |
| Unlimited | 2 | 10 | 20,83 | 5,86 | 13 | 20,97 | 5,17 | 23 | 20,91 | 3,88 |
| *Pain relief* | | | | | | | | | | |
| enhancing | -1 | 0 | 0,00 | 0,00 | 0 | 0,00 | 0,00 | 0 | 0,00 | 0,00 |
| Without changes | 0 | 1 | 2,08 | 2,06 | 2 | 3,23 | 2,24 | 3 | 2,73 | 1,55 |
| mild anesthesia | 1 | 8 | 1 6,67 | 5, 38 | 8 | 1 2,90 | 4, 26 | 1 6 | 2, 73 | 1, 36 |
| Noticeable pain relief | 2 | 10 | 20,83 | 5,86 | 14 | 22,58 | 5,31 | 24 | 21,82 | 3,94 |

As can be seen from the table, an improvement in the general condition after combination therapy with the use of targeted therapy and radiopharmaceutical therapy was noted in 56 patients, which amounted to 87.5%. A decrease in the number of analgesics and their dosage was noted in 50 (78.1%) patients, of which 14 (21.8%) patients stopped taking analgesics, out of 50 patients in 28 (56%) patients, the number and dose of admission decreased to 80%. analgesics. Improving mobility in 29 (45.3%) patients , subjective feelings of complete mobility were noted in 35 (54.6%).

**Table3**

**The table of duration of analgesic effect after combination therapy in months**

| **Localization** | After 1 dose | | After 2 dose | | After 3 dose | |
|---|---|---|---|---|---|---|
| | M | m | M | m | M | m |
| Kidney cancer | 5,06 | 0,19 | 6,69 | 0,19 | 6,19 | 0,24 |
| Prostate cancer | 5,66 | 0,18 | 7,58 | 0,19 | 7,98 | 0,23 |

As can be seen from the table, with repeated administration of the radiopharmaceutical 3 months after the initial use, the duration of the antianginal effect increases, which is confirmed by statistical methods. At the same time, the 3rd dose of the drug does not lead to an increase in the duration of antianginal therapy.

The duration of benefit after repeated administration of samarium oxybral is also an important indicator of pain relief in palliative care.

The analgesic period increases with repeated administration of samarium in cases where the first administration of the drug had a significant analgesic effect. That is, if a

pronounced analgesic effect was noted during the initial administration of samarium, then with the repeated administration of samarium, the period of analgesia increased and vice versa, if the patients did not have a primary response during the initial administration, then the analgesic property was not observed from the repeated administration of samarium.

A milder palliative effect of 153 Sm is explained by a short half-life (46.3 h), as a result, a shorter duration of local irradiation. Treatment with samarium strictly eliminates bone pain and cannot replace general chemotherapy and hormonal drugs.

**Pain score (BP).**

Mean values and changes in pain assessment 1-3 months after administration of 153 Sm-OXABIFOR are shown in Table 4.

**Table-4**

| Points | Basal data | | After 1 month | | After 3 month | |
|---|---|---|---|---|---|---|
| | M | m | M | m | M | m |
| Changes in pain assessment | 8,30 | 0,45 | 5,31 | 0,24 | 4,79 | 0,19 |
| Pain assessment | abs | % | abs | % | abs | % |
| 0 | 0 | 0,00 | 0 | 0,00 | 2 | 6,25 |
| 1 | 0 | 0,00 | 3 | 9,38 | 2 | 6,25 |
| 2 | 0 | 0,00 | 2 | 6,25 | 5 | 15,63 |
| 3 | 0 | 0,00 | 6 | 18,75 | 3 | 9,38 |
| 4 | 0 | 0,00 | 5 | 15,63 | 8 | 25,00 |
| 5 | 0 | 0,00 | 5 | 15,63 | 6 | 18,75 |
| 6 | 1 | 3,13 | 4 | 12,50 | 1 | 3,13 |
| 7 | 3 | 9,38 | 5 | 15,63 | 5 | 15,63 |
| 8 | 14 | 43,75 | 2 | 6,25 | 0 | 0,00 |
| 9 | 14 | 43,75 | 0 | 0,00 | 0 | 0,00 |

As can be seen from the table at the beginning of treatment, the intensity of pain was characterized at the level of 6-9 points. 1 month after the administration of 153 Sm-OXABIFOR, the OB changed as follows: 21 (60%) patients showed a decrease in pain, 6 (18.7%) increased pain, and 5 (15.6%) had no effect. Three months after the administration of 153 Sm-OXABIFOR, OB was carried out as follows: pain disappeared in 2 (6.3%) patients, pain decreased in 27 (84.3%) patients, and pain increased in 2 (6.3%) patients. Bone palliative effect was obtained after 1 and 3 months: complete pain relief in 3 (10%) and 2 (6.3%) patients, marked pain relief in 11 (34%) and 10 (31%) patients, slight relief in 10 (31) patients %) and 11 (34%) patients and no effect in 8 (25%) and 9 (28%) patients, respectively.

*Painkiller rating.* Pain relief was accompanied by a reduction in the required dosage of analgesics. Changes in analgesic score at 1 and 3 months after combination therapy are shown in Table 5.

**Table -5**

**Assessment of the analgesic effect according to the WHO scale.**

| Points | Basal data | | After 1 month | | After 2 month | |
|---|---|---|---|---|---|---|
| | abs | % | abs | % | abs | % |
| 0 - without analgesic | 0 | 0,00 | 5 | 15,63 | 7 | 21,88 |
| 1 without opiate analgesics, NSAIDs | 7 | 21,88 | 10 | 31,25 | 12 | 37,50 |
| 2 light opiates | 18 | 56,25 | 10 | 31,25 | 9 | 28,13 |
| 3 highly active opiates | 7 | 21,88 | 7 | 21,88 | 4 | 12,50 |

Estimates of analgesic effect varied as follows from baseline data: analgesic discontinuation 15.6% and 21.9%, pain relief with NSAIDs 31.3% and 37.5%, mild opiates

31.3% and 28.1%, potent opiates 21.9% and 25% at 1 and 3 months, respectively. As can be seen from the table, when prescribing an integrated approach in the treatment of osteogenic metastasis of prostate cancer, there is a tendency to reduce the intake of analgesics *Patient mobility.* Pain relief was accompanied by an improvement in the patient's mobility. Mean values and changes in quality of life (QoL) based on the Karnofsky scale (KS) are as follows

**Table -6**
**Mobility of patients after combined treatment**

| Point | Basal data | | After 1 month | | After 3 month | |
|---|---|---|---|---|---|---|
| | M | m | M | m | M | m |
| Karnofsky scale | 47,00 | 1,65 | 67,06 | 1,50 | 66,00 | 1,34 |
| | abs | % | abs | % | abs | % |
| 20% | 0 | 0,00 | 0 | 0,00 | 0 | 0,00 |
| 30% | 0 | 0,00 | 1 | 3,13 | 0 | 0,00 |
| 40% | 1 | 3,13 | 1 | 3,13 | 1 | 3,13 |
| 50% | 12 | 37,50 | 3 | 9,38 | 2 | 6,25 |
| 60% | 14 | 43,75 | 11 | 34,38 | 10 | 31,25 |
| 70% | 4 | 12,50 | 6 | 18,75 | 6 | 18,75 |
| 80% | 1 | 3,13 | 6 | 18,75 | 6 | 18,75 |
| 90% | 0 | 0,00 | 3 | 9,38 | 5 | 15,63 |
| 100% | 0 | 0,00 | 1 | 3,13 | 2 | 6,25 |

When comparing data 1 month after combination therapy , the Karnofsky scale was changed as follows: compared *with the basal SC 40%* - 1 patient; *from basal SC 50%* - in 3 patients ; from *basal SC 60%* 11 patients, in 6 sick patients SC 70%, 4 patients, 3 patients 90% and in *1 patient SC 100, in 1 patient worsened QoL, which amounted to 30%.*

After three months the introduction of 153 Sm-OXABIFOR, QOL was changed as follows: according to the Karnofsky scale , it was changed as follows: in comparison *with the basal SC 40%* - 1 patient; *from basal SC 50%* - in 2 patients ; from *basal SC 60%* - 11 patients, in 6 patients SC 70%, in 6 patients SC 80%, in 5 patients 90% and in 2 patients SC *100.* As can be seen from the table, the overall quality of life of patients tended to improve, that is, at the beginning of treatment on the Karnofsky scale it was 47%, after complex treatment there was a statistically significant difference in improving the quality of life of 66% at the initial 47 ($p \leq 0.05$) .

**Conclusion:** To improve the quality of life and reduce the occurrence of pathological fractures in patients with kidney and prostate cancer, the appointment of systemic radiation therapy with 153-samarium oxabifor is indicated, which allows for a long time to stabilize the state of the skeletal system. Based on the developed treatment regimen, the survival rates, average life expectancy and quality of life of patients with multiple bone metastasis of kidney and prostate cancer have been increased.

**References:**


1. Bray F. et al. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries //CA: a cancer journal for clinicians. – 2018. – Т. 68. – №. 6. – С. 394-424.
2. Emily C.L. Wong and Anil Kapoor Does Bone-targeted Therapy Benefit Patients with Metastatic Renal Cell Carcinoma?// Translational Oncology Vol. 13, No. 2, 2020 pp. 241–244
3. Mirdjalol Dehkanovich Djuraev, Nodir Maxammatkulovich Rahimov, Mavluda Nigmatovna Karimova, Shakhnoza Shavkatovna Shakhanova. Current Views On The Pathogenesis Of The Parietal-Visceral Pathway Of Gastric Cancer Metastasis. The American Journal of Medical Sciences and Pharmaceutical Research, 2021/3/31. Том 3, № 03, P 94-103.

4. Shakhanova Sh Sh, MD Djuraev, NM Rakhimov, MN Karimova, AF Asatulayev. Determination Of Risk Parameters In The Detection Of Asymptomatic Bone Metastases Of Kidney And Prostate Cancer. The American Journal of Medical Sciences and Pharmaceutical Research 2021/2/28, Том 3, № 02, P 161-174.
5. Shaxanova Sh Sh, Raximov N.M. Improving the combined treatment tactics of many osteogen metastases of malignant tumors of the urinary-body system. Web of Scientist: International Scientific Research Journal 2022/4/30, P 1145-1149.
6. Алексеев Б.Я., Нюшко К.М., Каприн А.Д. Химиотерапия второй линии у больных кастрационно-рефрактерным раком предстательной железы. От клинических исследований к практике // ОУ. 2019. №1. – С 84-91.
7. Борзов К.А., Валиев А.К., Мусаев Э.Р., Кулага А.В. Выбор тактики хирургического лечения пациентов с метастазами рака почки в позвоночнике // Саркомы костей, мягких тканей и опухоли кожи. № 2–2018. С. 21-27
8. Моисеенко Ф.В. Будущее системной терапии в онкоурологии: таргетная терапия и/или иммунотерапия//Практическая онкология.-2019.-№2.-С.137-143.
9. Шаханова Ш.Ш., Рахимов Н.М., Эсанкулова Б.С., Корабоев Ф.Т., Хакимов А.А. Осложнения таргетной терапии при лечении почечно-клеточного рака с метастазами в костях и лимфоузлах. Журнал вестник врача 2021, Том 1, Номер 2 (99), Р116-120.
10. Шаханова Ш.Ш., Рахимов Н.М. Мультимодальный подход к лечению множественных остеогеных метастазов рака почки и предстательной железы. Клиническая и экспериментальная онкология 2020, №4 Стр 50-56.