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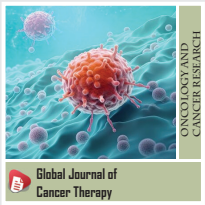

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Short Communication

Bone Tumor Metastasis Therapeutics, New Ideas and Perspectives

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Abstract

Bone cancer and metastasis treatments need new ideas and perspectives. A huge number of cancer patients with osteosarcoma and cancer metastasis show great pains, move difficult, incurable features and lack of effective drugs. Critical challenge and dilemma of bone-related cancer, disease diagnosis, and treatment need updating in conventions and special care, especially in disease diagnosis and classification. To promote bone cancer and metastatic treatment outcomes, sustainable medication creation, therapeutic evaluation, and sustainable academic funding are indispensable. This Article discusses some of the important topics in bone cancer treatments.

Introduction

Cancer is the second leading cause of mortality among all diseases worldwide [1-2]. Since neoplasm metastasis plays a leading role in patients' deaths in clinical trials (80%-90% of all cancer deaths), neoplasm metastasis diagnosis and treatment are the front line for basic and clinical cancer research [3-5].

Bone cancer diagnosis and treatments

Bone cancer and metastasis need new knowledge, academic explorations in pathogenesis and treatments [6-10]. A plenty of cancer patients with osteosarcoma and cancer metastasis show great pains, mobility problems, incurable features, and low survival elongation even if 'proper treatments' are given. To promote bone cancer and metastatic treatment outcomes, sustainable medication creation, therapeutic evaluation, and funding are indispensable.

Methods

Bone cancer treatments are classified as surgery, radiology, immunotherapy, and drug treatment. Facing the critical nature of bone-related cancer, disease diagnosis and treatment need new ideas and perspectives. Methods, technology, and routines in diagnosis and therapeutic selections must be created [6-10].

BOX: Major topics for bone cancer diagnosis and treatments.
Increased disease diagnosis studies from more parameters, academic, or technological
Clear definition of cancer (subtypes, genes, and molecules)
Technical promotion of radiotherapy (short time spans or others)
Drug evaluation promotion (new architecture, chemical or biological types)
Clinical therapeutic selections and applications
Treatments of cancer by multidisciplinary (surgery, oncology, academic, molecular, and technical)
Personalized medicine (drug sensitivity, genomics, transcriptomics, and multi-omics)
Treatment of cancer metastasis from the metastatic cascade, stages, and plasticity
Pharmaceutical (drug delivery and combined therapies)
Therapeutic selections from cancer patients
Treatment of bone cancer by traditional medicine (acupuncture, herbal medicine, and pain alleviation)

General outlooks

Human bone tissue is one of the most common tissues for hosting metastatic cancer. Pathogenesis and diagnostic relations should be further revealed, especially in areas of radiotherapy, drug targets, mechanisms of action, and selection.

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There are a lot of different anticancer drugs in the clinic. At present, drug treatment and combinations are the first choice for bone metastatic diseases. To facilitate biomedical research, drug response predictions or other platforms in the clinic can be placed on the high agenda [11-17] (Figure 1);

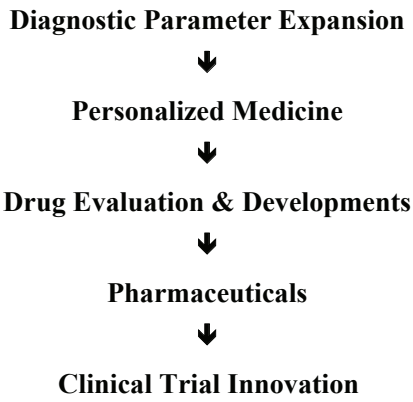

Figure 1: Major pathways for bone cancer clinical trials.

Discussion

Human bones are very dense in tissues and tumor environments. Anticancer drugs are more difficult to penetrate into the tumor cells within human bones. Some nanotechnology for diagnosis, treatment, and recovery of bone cancer can provide new directions for better outcomes of treatments [18]. Many other pathways and ideas can lead to better outcomes for cancer.

New ideas and technology for differentiating the characteristics of bone cancer (local or metastasis) should be sustainably compared and personalized treatments. Treatments suited for high-density environments should be especially noticed and promoted.

New ideas and perspectives

Pharmacology: The priority for bone cancer treatments is the discovery of highly active drugs. In general, no highly effective anticancer drugs have been discovered for the treatment of bone cancer. Many anticancer drugs have high drug resistance, toxicity, and low efficacy [11]. Special drug targets should be discovered. In the clinic, biomarker detection and diagnosis may help to further drug selection and combination [12-14]. By the discovery of targeted molecules, drug efficacy may be improved.

Pharmaceutical: Though the pharmacological study of drugs for bone cancer is slow, pharmaceutical studies for drug delivery, like hydrogel, printer, liposome, antibody delivery, and different nanoparticles, have improved therapeutic outcomes very dramatically. Pharmaceutically modified drugs can be directly used or combined with thermotherapy or radiotherapy [15-20]. These pharmaceutical innovations may trigger great possibilities and outcomes of therapeutic progression and breakthroughs.

Immunotherapy. Immunotherapy shows a promising future in cancer treatments and drug development, like mRNA-based vaccines and many others [15]. These therapies are relatively more specific and unlike normal anticancer drugs. They are new categories of cancer treatments and targets.

New diagnostic initiatives: Cancer diagnosis is complicated now, and it is not clearly defined. Currently, it is shown as TNM as a basic diagnosis for cancer patients. But, genetic or molecular diagnosis is flourishing now. To unite this information, the new systems of TNMGgenesMmoleculesTtargets should emerge [21]. To promote these new initiatives, brainstorms should be showcased.

New experimental and clinical models: In an experimental study, we can receive data on drug responses from animals. Clinical diagnostics is difficult for the evaluation of drug responses due to the instability of diagnostic profiles, especially in image evaluations. Blood circulatory tumors or their biomarkers in patients are new trends and clinical applications [22]. These diagnostic and management studies should be promoted in wide-ranges.

Pain alleviation: For bone cancer, severe pain is commonplace. Radiotherapy or painkillers are a usual way of alleviating pain [23]. Radiotherapy, though not curability to disease now, can be greatly useful for alleviation pains. Nowadays, radiotherapy with short time-spans can be very effective for both tumor inhibition and pain alleviation.

Drug response prediction: To increase drug efficacy, drug selection is a useful way, such as drug response prediction and biomarker detection [24-28]. They are now categorized as personalized medicine or precision oncology [29-30]. Their names have evolved in the past six decades [29]. Researchers should understand their history, nowadays and the future.

Future trends

Drug treatment for metastatic diseases has different categories and clinical applications [3-5]. The association and relationship between diagnosis and drug responses should be built in the future. Personalized medicine and precision oncology are a useful drug selection paradigm currently and will continue to grow in the future [29-30]. These integrative medical ideas, techniques, and systems are progressing rapidly. Future advancement in this issue should be greatly expected, especially from traditional medicine [31].

Conclusion

Bone cancer treatment can be studied in many pathways, like new diagnostic techniques, pharmacology, pharmaceutical, immunotherapy, experimental models, and others. Clinical cancer diagnostic and therapeutic study of both clinicians and technology should be reflected and promoted recursively. New ideas and technology for differentiating the characteristics of bone cancer (local or metastasis) should be sustainably compared and personalized. Many discoveries can be found via the above-mentioned approaches.

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