



Cancer Bone Metastasis, Experimental Study

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Abstract

Cancer bone metastasis was a common clinical evidence for cancers, especially to categories of breast, prostate and lung cancer (general incidence > 30%). To avoid further devastating event and human mortality, drug treatment was supposed to intervene. To the promotion and paradigms of clinical drug treatment, experimental study is indispensable. This editorial discusses bone cancer metastasis treatment in experimental study.

Keywords: Bone Cancer; Neoplasm Metastasis; Drug Treatment; Tumor Models; Experiment Study

Introduction

Cancer is the secondary leading cause of human mortality worldwide [1-4]. Cancer bone metastasis is one of frequent cancer metastasis events and mortality in the clinic, especially to categories of breast, prostate and lung cancer (general incidence > 30%) [5-9]. To avoid devastating pathogenic consequences and human mortality, the experimental drug treatment study and investigations should be focused. This editorial discusses the landscape of drug development in experimental scenarios.

Experimental cancer models

There are a lot of different anticancer drugs in the clinic. How to evaluate drug responses is determined by experimental models-*in vitro* and *in vivo*. Several tumor models for bone diseases are included [10-18]:

- **In vitro tumor models**
 - Conventional tumor cell lines cultured in two dimension or molecular biomarkers involving bone cancer progresses [11-13].
 - Miniature drug response models in 3-dimension or microfluidics [12-14].

- Drug targets and mechanisms against tumor stem-cells (organoids) [10-14].
- Tumor spectral analysis [15-17].

- **In vivo tumor models**

- Spontaneous bone metastases models (subcutaneous, rare incidence in current technology) [18].
- Artificial bone metastases models (iv, cardiovascular, and spinal tumor injection) [18].
- New mechanisms, targets and technology should be progressed step by step [19,20].
- Pharmacological investigation for anti-metastatic drugs [21-24].
- Diagnostic specificity for drug response prediction and evaluation (fluorescence or blood biomarker) [9].

Drug response association between experiments and clinics

- Herbal medicine may be evaluated in physiological conditions and integrity in animals [25-27].

- Personalized medicine is an useful drug selection paradigm that may optimize drug treatment against cancer growth and metastasis [28-33]. These knowledge translation could be used in experimental and clinical study.
- Drug combination commonly promote clinical outcomes yet mechanisms should be understood [34,35].
- Pharmaceutical innovation should be evaluated in animal modality, such as nanomedicine and other drug delivery systems [36].

Discussion

There are many rooms to improve in cancer bone metastatic study (diagnostic, pathology and therapeutics). More mimic experimental tumor models to clinical situations should be built in present experimental study. By update experimental models, clinical success may be reached.

Future Trends

Experimental study of cancer bone metastasis plays key role for clinical therapeutics and patient's survivals. New pathways should be explored to enrich targets and mechanisms in experimental settings. Knowledge should be accumulation in animals instead of human beings for its medical significance could be easily noticed. Many new discoveries could be expected from these experimental investigations and preclinical evaluation.

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