Journal of Orthopedic Oncology
ISSN: 2472-016X
Gulsum, J Orthop Oncol 2023, 9:3
Mini Review
Open Access

Study of Pathological Assessment, Immunohistochemistry and Bone Specimen Collection in Cancer Patients

Sahin Gulsum*

Department of Medicine, Research Institute of the McGill University Health Center, Canada

Abstract

The gold standard for determining static and dynamic bone morphological parameters and tumor burden in bone is currently bone biopsy with a 7–8 mm "Bordier" trephine of trans-iliac bone. However, in clinical practice, the size of the needle is rarely, if ever, used because it is a concern for both patients and doctors. Our team has previously assessed tumor receptors with 2 mm trephine needles and compared tumor cell yield between 2 mm iliac crest biopsies and CT-guided specimens.

Keywords: Bone microarchitecture; Histomorphometry; Bone turnover

Introduction

Additionally, we conducted a pilot study of morphologic bone analysis with just three patients. Our pilot study was expanded to include a more in-depth examination of 12 patients with metastatic breast cancer because previous work with necropsy specimens demonstrated that trephines of 2 mm and 7 mm had comparable quality [1]. Patients with minimally invasive bone metastasis appear to develop resistance to antiresorptive agents, in contrast to those with more advanced skeletal metastasis, according to our findings.

Twelve patients with ECOG performance status 0–2 and pathologically confirmed invasive ductal breast carcinoma, radiologic evidence of metastatic disease at any site, and informed consent were considered eligible for enrollment. A combination of symptoms, computed tomography scans, and isotope bone scans were used to diagnose bone metastases [2]. When necessary, magnetic resonance imaging confirmation was carried out. There were no restrictions placed on the number of hormonal therapy lines, chemotherapy, or type or presence of bone metastases when enrolling patients. We divided patients according to whether they had less than three bone lesions, referred to as limited skeletal metastases (LSM) or extensive skeletal metastases (ESM), as previously described in the literature.

As controls, two patients who did not receive BTA—one with ESM and one without bone metastases. Provide details. Except for patient number 8, all patients were postmenopausal. Exclusion criteria included patients with a hematological disorder that posed a significant risk of bleeding during bone biopsy [3]. DEXA scanning was performed on all patients prior to the bone biopsy. The Institutional Research Ethic Board of Ottawa Hospital Cancer Center reviewed and approved the study.

Result

Prior to the biopsy, patients received two 2-day courses of tetracycline separated by a 10-day interval. The Jam-shidiTM bone biopsy trephine (Cardinal Health, Dublin, Ohio, USA) was used to collect trans-iliac crest bone biopsy samples. On the same side of each patient's posterior iliac crest, two biopsies were taken. One sample was stored in 10% formalin prior to pathological evaluation, while the other was stored in 70% ethanol and sent for histomorphometric analysis [4]. This method only allows for the examination of trabecular bone.

Decalcified sections were used to evaluate bone biopsies on paraffin-embedded sections. Only surface decalcification was used because decalcification affects ER or PR staining results. For 15 minutes, a weak acid decalcifier (Surgipath decalcifier I, Leica Bio-systems, Buffalo Grove, IL) was used to dissolve small calcium deposits in paraffin blocks. This allowed the decalcifier to penetrate the block and dissolve the calcium. After that, the block is sectioned and rinsed in water to get rid of any remaining acid [5]. A pathologist examined the samples to confirm that the disease had spread and to ensure that they had sufficient cellularity for the ER and PR analyses. The Ventana Ultraview Detection System (UltraView Universal DAB Detection Kit, Ventana Medical Systems, Inc., Tucson AZ) was used for immunostaining for ER and PR proteins. Checks were made to see if there were any positive or negative external laboratory controls. On the same slide, negative, weakly positive and strong positively positive breast cancer control tissues were mounted [6].

Discussion

As previously mentioned, primary measurements and structural kinetic bone histomorphometric were utilized [7]. For plastic segment, bone examples were fixed for the time being in 4% paraformaldehyde (PFA) in phosphate support arrangement (PBS), implanted in methyl methacrylate, and segmented (5-µm thickness). Toluidine blue (TB), alkaline phosphatase (ALP), tartrate resistant acid phosphatase (TRAP) [8], and Von Kossa and van Gieson (VKVG) staining were utilized. Von Kossa and Van Gieson staining was used to evaluate bone mineralization and collagen deposition, TRAP staining was used to count the number of osteoblasts, ALP was used to measure the activity of the osteoblasts, and TB was used to count the number of osteoblasts [9].. Starting areas were counter stained with eosin and consequently seem pink (patient #1, #2, #3), this was subsequently excluded for future biopsy examples [10].

***Corresponding author:** Sahin Gulsum, Department of Medicine, Research Institute of the McGill University Health Center, Canada, E-mail: gulsun56@gmail.com

Received: 1-May-2023, Manuscript No: joo-23- 91646; **Editor assigned:** 04-May-2023, Pre-QC No: joo-23- 91646 (PQ); **Reviewed:** 17-May-2023, QC No: joo-23-91646; **Revised:** 24-May-2023, Manuscript No: joo-23- 91646 (R); **Published:** 30-May-2023, DOI: 10.4172/2472-016X.100198

Citation: Gulsum S (2023) Study of Pathological Assessment, Immunohistochemistry and Bone Specimen Collection in Cancer Patients. J Orthop Oncol 9: 198.

Conclusion

Using the Osteomeasure software, osteoblast count, and osteoclast count were measured in stained bone sections. ALP-positive cell surface/bone surface measurements were used to measure osteoblast activity. Because we did not have sufficient controls, we used previously published normal values of osteoclasts in healthy postmenopausal women as references. Using a light microscope at room temperature, images were taken. Leica Bio systems, Buffalo Grove, IL) with objectives with numerical apertures of 2.5 (0.07), 20 (0.40%), and 40 (0.65%). A camera was used to take all histological images (DP72; DP2-BSW software (XV3.0; Olympus NDT Canada, Quebec, QC) was used to acquire the data. Olympus NDT Canada, Quebec, and QC), and Photoshop (Adobe) was used to process it. Under fluorescent light, iliac bone sections that were 20 m thick were examined at a magnification of 100. At active bone formation sites, tetracycline was incorporated into the bone tissue at 10-day intervals, and each course of tetracycline produced a yellow line. This made it possible to measure the amount of bone formation that occurred between the two courses of tetracycline.

References

1. Park S, Lee W, Kim S (2003) The relative risks of the metabolic syndrome defined by adult treatment panel iii according to insulin resistance in Korean population. J Korean Med Sci 64: 552-560.
2. Haffner SM, Valdez RA, Hazuda HP, Mitchell BD, Morales PA (1992) Prospective analysis of the insulin-resistance syndrome (syndrome x). Diabetes 41: 715-722.
3. Hong E (2015) The mediating effect of self-efficacy in the relationship between diabetes knowledge and health promoting behaviors: Focus on gender differentiation. J Korean Acad Soc Nurs Educ 21: 509-517.
4. Koch M, Klügl M, Frankewycz B, Lang S, Worlicek M, et al. (2021) Football-related injuries are the major reason for the career end of professional male football players. Knee Surg Sports Traumatol Arthrosc 29: 3560-3568.
5. Schmidt-Olsen S, Jørgensen U, Kaalund S, Sørensen J (1991) Injuries among young soccer players. Am J Sports Med 19: 273-275.
6. Krutsch W, Memmel C, Alt V, Krutsch V, Tröß T, et al. (2022) Timing return-to-competition: a prospective registration of 45 different types of severe injuries in Germany's highest football league. Arch Orthop Trauma Surg 142: 455-463.
7. Munn J, Sullivan SJ, Schneiders AG (2010) Evidence of sensorimotor deficits in functional ankle instability: a systematic review with meta-analysis. J Sci Med Sport 13: 2-12.
8. Fortuna M, Teixeira S, Machado S, Velasques B, Bittencourt J, et al. (2013) Cortical reorganization after hand immobilization: the beta qEEG spectral coherence evidences. PLoS One 8: 79-912.
9. Fransz DP, Huurnink A, Kingma I, de Boode VA, Heyligers IC, et al. (2018) Performance on a Single-Legged Drop-Jump Landing Test Is Related to Increased Risk of Lateral Ankle Sprains among Male Elite Soccer Players: A 3-Year Prospective Cohort Study. Am J Sports Med 46: 3454-3462.
10. Pearce CJ, Tourné Y, Zellers J, Terrier R, Toschi P, et al. (2016) Rehabilitation after anatomical ankle ligament repair or reconstruction. Knee Surg Sports Traumatol Arthrosc 24: 1130-1139.