Evaluation of the Effectiveness of a Cancer Osteoporosis Outpatient Clinic in Preventing Fragility Fractures in Cancer Patients

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Introduction

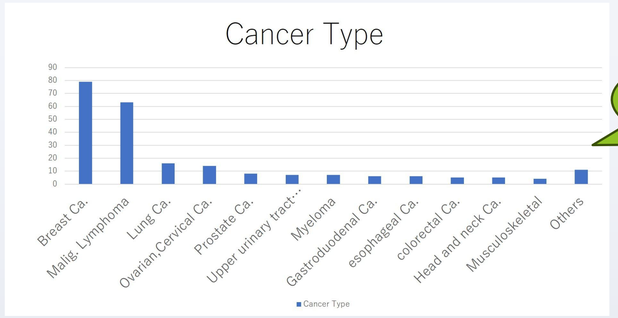
Cancer therapies—including aromatase inhibitors, high-dose corticosteroids, cytotoxic chemotherapy and reduced mobility—accelerate bone loss, placing oncology patients at high risk of fragility fractures[1,2,3]. To counteract this threat, our centre opened a Cancer-Osteoporosis Clinic in 2021 that screens, educates and treats patients in parallel with oncologic care. This study evaluates the clinic's impact by analysing fracture-free survival and the temporal pattern of fracture events. We hypothesised that a structured, guideline-driven programme would lower fracture incidence and thereby sustain activities of daily living and uninterrupted cancer treatment.

Purpose

To evaluate whether a structured, guideline-based Cancer-Osteoporosis Clinic reduces fragility fractures and maintains treatment continuity in oncology patients.

Methods

A retrospective review was conducted on 267 consecutive adults attending the clinic from January 2021 to December 2023. Baseline data (age, sex, primary malignancy) were recorded. Osteoporosis was diagnosed by dual-energy X-ray absorptiometry, thoracolumbar CT reconstructions, spine radiographs and bone metabolic markers. Treatment followed national osteoporosis, CTIBL and glucocorticoid-induced osteoporosis guidelines and included bisphosphonates, denosumab, romosozumab and vitamin D / calcium supplementation. Fragility fractures were prospectively tracked; Kaplan–Meier analysis yielded 6- and 24-month fracture-free survival rates.



Referral frequency varied markedly by primary department, underscoring the need for cross-disciplinary education.

Figure1. Distribution of Primary Cancers (n = 267)

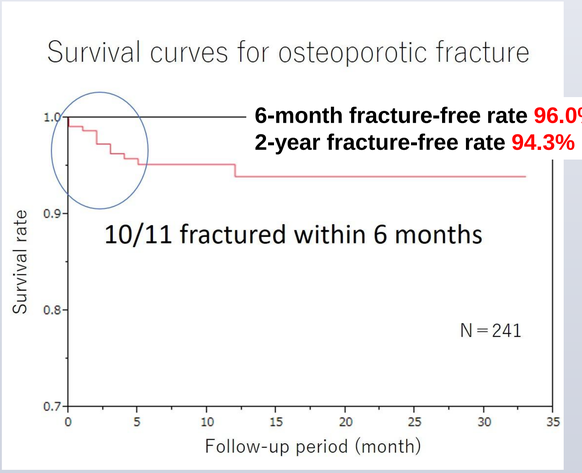


Figure 2. Fracture-free Survival (Kaplan-Meier)

Results

Results

A total of 267 cancer patients (mean age: 67.6 years; 79 males, 188 females) were treated at our cancer osteoporosis clinic. The most common malignancies were breast cancer (n = 87) and malignant lymphoma (n = 74). The leading osteoporosis treatments were alendronic acid (n = 100) and romosozumab (n = 37), with additional agents prescribed based on individual clinical needs. Osteoporosis care was especially required in breast and hematologic cancers—largely due to long-term aromatase inhibitor therapy and steroid-induced bone loss, respectively. This highlights the need for specialized bone health management in these populations.

Early Fracture Window

Among the 267 patients, 11 fragility fractures occurred. Notably, **10 out of 11 fractures (91%) happened within the first 6 months** of initiating osteoporosis treatment, suggesting limited protection during the early phase. Enhanced early intervention and fall-prevention strategies may help reduce this risk.

Discussion

The cancer-osteoporosis clinic achieved a 6-month fracture-free survival of **96.0%** and maintained **94.3%** at 24 months. Yet **91 %** (10/11) of all fractures clustered in the first 6 months, indicating that protective effects lag behind treatment initiation . These data underline the urgency of immediate bone-protective therapy and intensified monitoring during this early window, especially for patients on steroids or aromatase inhibitors. Inconsistent referral patterns among oncology departments point to a second gap—interdisciplinary awareness. Addressing both early intervention and cross-specialty collaboration is pivotal to further lower fracture incidence and keep cancer therapy on track.

Conclusion

Guideline-based intervention achieved a fracture-free survival of **96.0 % at 6 months and 94.3 % at 24 months**. However, 91 % of all fractures occurred within the first half-year, signifying a vulnerable window before maximal therapeutic benefit. Earlier referral, immediate pharmacologic loading, intensified fall-prevention counselling and closer biochemical monitoring during this period may further reduce early fractures. In addition, marked variability in referrals between oncology divisions highlights an educational gap; strengthening cross-departmental pathways could broaden access to bone-protective care and help maintain continuity of systemic cancer therapy.

References

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【Conflict of Interest】

The authors declare no conflicts of interest related to this study.