Effect of Chinese Herbal Medicine Combined with Conventional Anti-Osteoporotic Medication on Fracture Risk in Older Adults with Osteoporosis: A Retrospective Cohort Study

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INTRODUCTION

- Osteoporosis is a common skeletal disorder that increases fracture risk, particularly in older adults.
- Chinese herbal medicine (CHM) are frequently used as adjuncts to conventional anti-osteoporosis medications (AOMs), but their real-world impact on fracture risk remains unclear.

AIMS

- To assess the association between concomitant Chinese herbal medicine (CHM) use and fracture risk among patients with osteoporosis receiving Western standard therapy (WST).

METHODS

STUDY DESIGN

- Retrospective cohort study using a regional healthcare database in Eastern China (2019–2024).

POPULATION

- Adults aged ≥50 years with osteoporosis and newly initiating AOMs were included.
- Patients with prior treatment, insufficient baseline data, Paget's disease, or malignancy were excluded.
- Eligible patients were categorized into two cohorts according to whether they had been exposed to CHM at their first prescription after osteoporosis diagnosis.
- CHM treatment included preparations of total flavonoids derived from Epimedium, as well as commonly prescribed proprietary formulations such as Qigu, Jintiange, Xianling Gubao, Gushukang capsules, and Zuogui pills.

OUTCOMES

- The primary outcome was major osteoporotic (MOP) fracture.
- Secondary outcomes included hip, nonvertebral (NV), hospitalized vertebral (HV), and non-hip nonvertebral (NHNV) fractures.

STATISTICAL ANALYSIS

- Propensity score overlap weighting and Cox proportional hazards models were used to estimate HRs and 95% CIs.

RESULTS

- A total of 89,141 patients with osteoporosis were included, including **2,884 CHM users** and **86,297 non-CHM users.**
- Compared with non-CHM use, integrative CHM use was not associated with a statistically significant reduction in fracture risk.
- The hazard ratios (HRs) were as follows:

  Major osteoporotic fracture (MOP): HR 0.97 (95% CI 0.78–1.20), see **Fig. 1**.

  Hip fracture: HR 0.94 (95% CI 0.66–1.34), see **Fig. 2 (A)**.

  Nonvertebral fracture (NV): HR 1.02 (95% CI 0.81–1.27), see **Fig. 2 (B)**.

  Non-hip nonvertebral fracture (NHNV): HR 1.01 (95% CI 0.77–1.34), see **Fig. 2 (C)**.

  Hospitalized vertebral fracture (HV): HR 1.26 (95% CI 0.92–1.73), see **Fig. 2 (D)**.

CONCLUSIONS

- In this large retrospective cohort study of older adults with osteoporosis, combined use of WST and CHM was not associated with a reduced risk of hip, hospitalized vertebral, nonvertebral, non-hip nonvertebral or major osteoporotic fractures. These findings suggest that, in routine clinical practice, CHM may not confer additional fracture-preventive benefits beyond standard pharmacologic treatment.

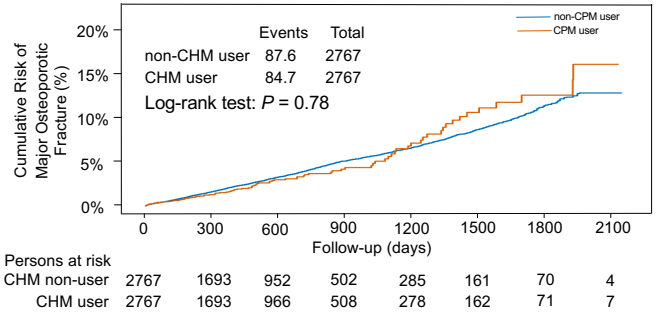

Fig. 1 Cumulative incidence of major osteoporotic (MOP) fracture outcomes comparing patients according to CHM use (users vs non-users)

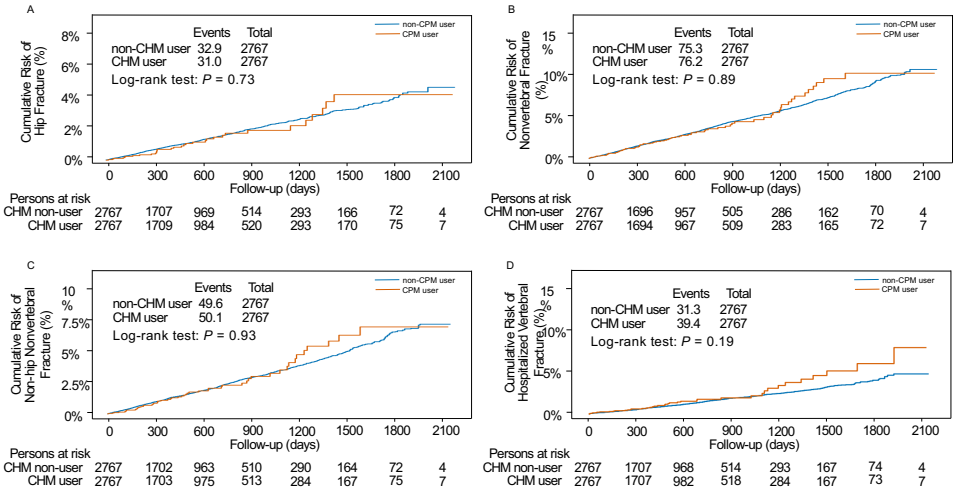

Fig. 2 Cumulative incidence of fracture outcomes: (A) hip fracture; (B) NV fracture; (C) NHNV fracture; (D) HV fracture comparing patients according to CHM use (users vs non-users)

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