

How are we using bisphosphonates in children with secondary osteoporosis in a tertiary centre?

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Background

Secondary osteoporosis (2^o OP):

1. Significant fracture history in absence of trauma⁽¹⁾
 - 1 or more vertebral fracture
 - 2 or more long bone fractures by age 10
 - 3 or more long bone fractures by age 19
2. BMD z score <2

- Large cohort of patients including patients on long term steroids and with significant immobility
- Use of bisphosphonates (BPs) is anecdotally reported to increase bone mineral density (BMD), decrease fractures and decrease bone pain
- Not currently enough evidence to support use of BPs as standard therapy⁽²⁾

Objective

We appraised our current practice of BP use in children with 2^o OP⁽¹⁾ or with low BMD and significant symptoms.

Method

- 59 patients treated with BPs over a 7-year period
- Average follow up 42.2 months (range 6-96)
- Data collected on demographics, changes in BMD Z-score, fracture rates, bone pain and adverse effects

Results

- Children were included with the following conditions:

Neurodisability (n=28)

Duchenne muscular dystrophy (n=15)

Rheumatology – juvenile arthritis, juvenile systemic lupus erythematosus (n=9)

Oncology – acute lymphoblastic leukaemia (n=4)

- Mean age of commencing treatment was 12.75 years (4-24)
- Maximum duration of treatment was 5 years
- Increase in use of Zoledronic Acid
- Treatment tolerated well in 75%
- Infrequent minor complications, including venous access issues, were reported in the rest

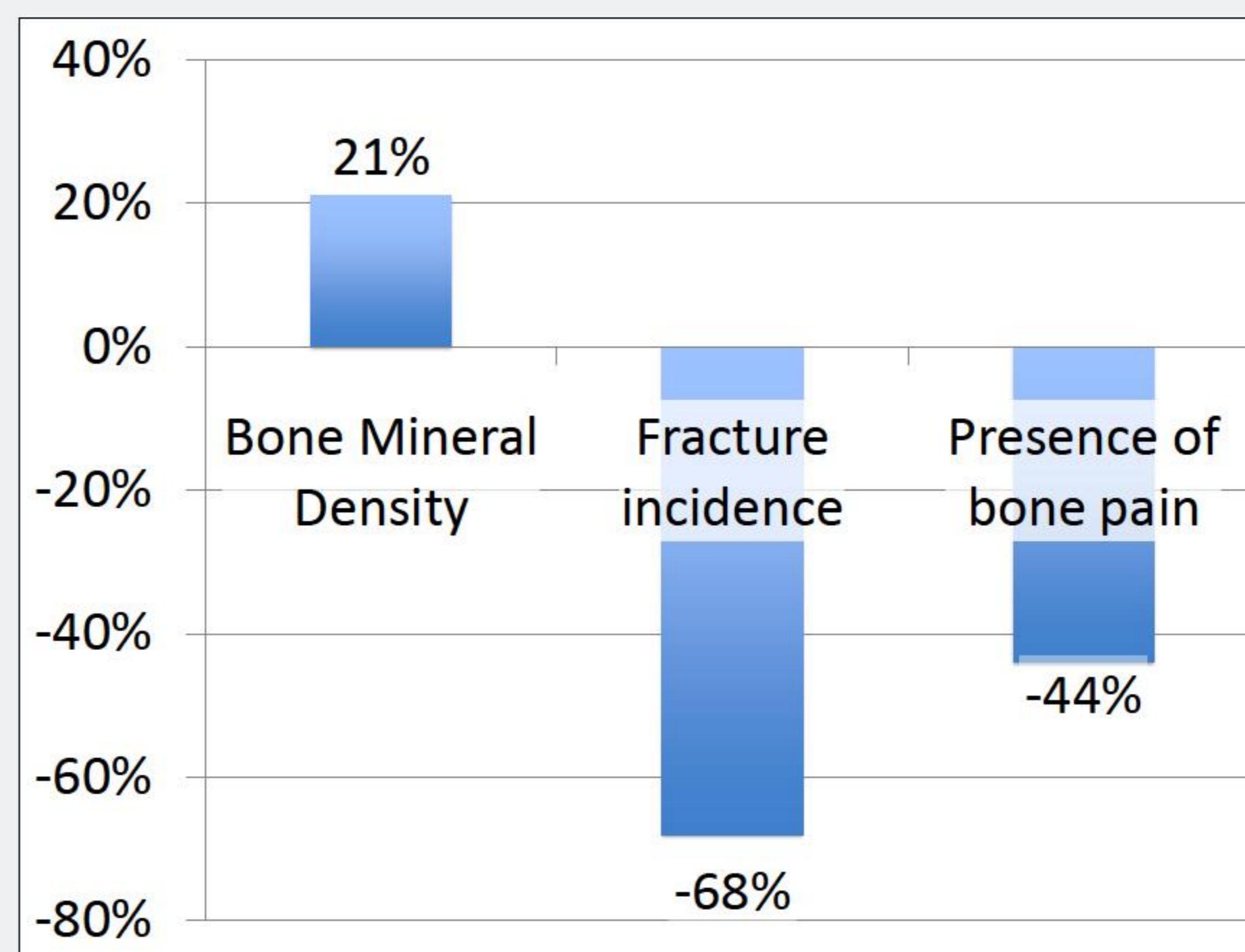


Figure 2. Percentage change, pre and post bisphosphonate

Bone mineral density

- Mean Z-score increased from -3 pre-BP to -2.36 post treatment.
- $p = 0.0043$ with Wilcoxon signed-rank test of the paired scores (n=28).

Fracture incidence

- 78% had long-bone and/or vertebral fractures prior to BP treatment.
- This decreased to 10% post BP.

Presence of bone pain

- 49% reported bone pain prior to BP.
- Of these with bone pain, 10% still reported pain after starting treatment.

Patient feedback:

"She is sleeping better and handling better since the bisphosphonate treatment started."

"Pain much better with Pamidronate. More mobile and energetic."

"She previously hated to be touched and is now much more comfortable. She no longer cries when she is washed and dressed. Her analgesia has also been reduced."

Conclusion

- Bisphosphonate use in a heterogeneous group of children with symptomatic low BMD or 2^o OP resulted in increased BMD, and decreased fractures and pain.
- The treatment was well tolerated, and Zoledronic Acid is increasingly being used.
- Longer term follow up of this cohort is required, along with future prospective studies using robust methods of measuring quality of life.

References

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2. Ward L, Tricco A, Phuong PN, Cranney A, Barrowman N, Gaboury I, Rauch F, Tugwell P, Moher D. Bisphosphonate therapy for children and adolescents with secondary osteoporosis. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD005324.

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