Medical Xpress

Steroid inhalers / pills for asthma linked to heightened risk of brittle bones and fractures

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Taking steroid inhalers or tablets to treat asthma or control flare-ups is linked to a heightened risk of brittle bones (osteoporosis) and increased vulnerability to broken bones (fragility fractures), finds research published online in the journal *Thorax*.

The higher the cumulative dose, and the longer the period of treatment, the greater these risks seem to be, indicate the findings.

Asthma is common, affecting around 334 million people worldwide. And steroid inhalers and tablets are widely used to dampen down airway inflammation and prevent and/or relieve asthma symptoms.

International guidelines recommend a stepwise approach to treating the condition, with steroid inhalers prescribed for the control of moderate to severe disease, and steroid tablets for flare-ups of severe asthma.

Research looking at the impact of steroids on bone health has so far proved inconclusive. The researchers wanted to see if looking separately at dose, number of courses, and steroid type might help to shed further light on the issue.

This is especially important, because international guidance has shifted towards greater use of inhaled steroids for moderately severe asthma while the use of steroid tablets has also increased, say the researchers.

They drew on anonymised health records entered into the nationally representative Clinical Practice Research Datalink (CPRD) GOLD database. This covers more than 15.4 million patients from 738 doctors' surgeries across the UK—equivalent to 7% of the UK population. And they drew on linked Hospital Episode Statistics (HES) data for July 2018, which record all hospital admissions in England.

They used these data to identify all adults with asthma diagnosed between April 2004 and December 2017, and who also had either osteoporosis or fragility fractures. These patients were matched with at least four patients of the same age and gender from the same general practice, but who didn't have osteoporosis or fragility fractures.

The researchers also checked for patients given at least one dose of bisphosphonates—a type of drug used to curb the loss of bone density and stave off osteoporosis—and bone strengthening vitamin D and calcium supplements.

The records were searched for other factors likely to affect bone density, including smoking, weight, and alcohol intake.

The number of prescriptions filled was used to work out the amount and duration of steroid treatment for the 12 months leading up to a diagnosis of osteoporosis or fragility fracture.

Analysis of all the data showed a clear association between both cumulative dose and number of courses of inhaled or steroid tablets and the risk of osteoporosis or fragility fractures.

Two to three steroid tablet prescriptions in the preceding 12 months were linked with larger odds of osteoporosis: those given 9 or more prescriptions and cumulative doses of 2500 mg or more had more than 4 times the risk of those who weren't prescribed these drugs, after accounting for potentially influential factors. They were also more than twice as likely to sustain a fragility fracture.

Similarly, those given 11 or more prescriptions for inhaled steroids were 60% more likely to have osteoporosis and 31% more likely to have fragility fractures than those not prescribed these drugs.

Patients given cumulative doses of more than 120 mg in the preceding year were 20% more likely to sustain a fragility fracture.

Only around half of patients prescribed steroid tablets and even fewer prescribed steroid inhalers were prescribed bisphosphonates in the year leading up to a diagnosis of osteoporosis or fragility fracture, a finding the researchers describe as "disappointing."

But they point out: "Current guidelines on asthma do not fully cover the management of bone comorbidities and no specific bone protection guidance is given. Our results suggest that risk and prevention of osteoporosis and [fragility fractures] should be addressed explicitly in future guideline updates."

This is an observational study, and as such, can't establish cause. And the researchers acknowledge that Inhalers can be difficult to use correctly, so possibly underestimating the actual dose taken. Their analysis also relied on prescriptions and not on actual compliance.

Nevertheless, they conclude: "Both [oral] and [inhaled] steroids are associated with an increased risk of osteoporosis and [fragility fracture] in people with asthma. The use of [these drugs] should be kept to the minimum necessary to treat symptoms and should be stepped down if symptoms and exacerbations are well managed."

And they add that doctors should consider additional bisphosphonate treatment to protect patients' bone health.

More information: Risk of osteoporosis and fragility fractures in asthma due to oral and inhaled corticosteroids: two population-based nested case-control studies, *Thorax* (2020). DOI: 10.1136/thoraxjnl-2020-215664

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