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No link between topical steroids and fracture risk found in children with atopic dermatitis

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The use of topical corticosteroids does not significantly increase fracture risk in young children diagnosed with atopic dermatitis, results from a large population-based study suggest.



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“Little has been published about the risk of fracture in children with atopic dermatitis on topical corticosteroids specifically,” one of the study authors, Reese L. Imhof, said in an interview following the virtual annual meeting of the Society for Pediatric Dermatology. “There are concerns, particularly among parents, regarding potential bone side effects through possible corticosteroid percutaneous absorption. Fears related to topical corticosteroid use likely stem from the fact that prolonged systemic corticosteroid use is associated with an increased risk of bone fractures.”

In an effort to determine the fracture risk in children who were diagnosed with atopic dermatitis (AD) prior to age 4 years and received topical corticosteroid treatment, Mr. Imhof, from Mayo Medical School, Rochester, Minn., and his associates used the Rochester Epidemiology Project records-linkage system to identify patients in Olmstead County, Minn., who received their first AD diagnosis prior to age 4 years between Jan. 1, 2004, through Dec. 31, 2017. Those who received topical corticosteroids listed in National Drug File-Reference Terminology class 8952 (anti-inflammatory, topical) or 8954 (anti-infective/anti-inflammatory combinations, topical) between Jan. 1, 2004, and Dec. 31, 2018 were included in the analysis and were followed to identify new bone fractures, excluding pathological fractures in neoplastic disease and skull or facial bone fractures.

The researchers conducted two analyses of the data. For the primary statistical analysis, they evaluated topical corticosteroid exposure as a binary time-dependent covariate in a Cox proportional hazard model using age as the time scale, with patients entering the risk set at the age of the first clinic visit rather than the age of their first AD diagnosis. Next, the researchers performed a landmark analysis as a sensitivity analysis. For this, each patient's fourth birthday was defined as the starting point, since all included patients were diagnosed with AD prior to age 4 years.

Of the 7,505 patients first identified with AD, 3,542 were included in the primary analysis and 2,499 were included in the landmark analysis. In the primary analysis, 2,384 patients (67%) received a topical prescription for a topical corticosteroid prior to age 4 years, and an additional 190 (5%) received their first prescription after age 4 years. The researchers observed that 451 patients (13%) had a fracture after AD diagnosis at a median age of 7.4 years. The median age at last follow-up for the remaining 3,091 patients was 6.6 years. Evaluated as a time-dependent covariate, the use of a topical corticosteroid was associated with a nonsignificant 17% increased risk of fracture (hazard ratio, 1.17; $P = .16$).

In the landmark analysis, 1,722 patients (69%) were prescribed a topical corticosteroid prior to age 4 years. Of these patients, 333 (13%) had their first fracture after AD diagnosis, at a median age of 8.7 years. The median age at last follow-up for the remaining patients was 9.3 years. The researchers observed that, starting at 4 years of age, there was no association between topical corticosteroid use and risk of fracture (HR, 1.00; $P = 1.00$).



Reese L. Imhof

“Our findings suggest that topical corticosteroids do not significantly increase fracture risk in this pediatric population with atopic dermatitis,” Mr. Imhof said. “Dermatologists can use the results of this study to reassure parents of infants and young children, as most patients in our study received their first topical corticosteroid prescription prior to age 4.”

He acknowledged certain limitations of the study, such as its retrospective design and study population, which was predominantly white and resided in the upper Midwest. “Also, our study examined prescription data with the assumption made that topical corticosteroids were used as prescribed,” he said. “An additional limitation is that we evaluated ever versus never exposure to topical corticosteroids rather than cumulative duration of use and/or potency.”

Mr. Imhof and his colleagues reported having no financial disclosures.