

The Relationship Between Obesity and Psoriasis in the Pediatric Population: Implications and Future Directions

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The relationship between psoriasis and obesity has been widely acknowledged in adults but only recently has been established in the pediatric population. New studies have revealed not only that children with psoriasis are more likely to be obese^{1,2} but also that this relationship occurs worldwide³ and is mediated by psoriasis severity.^{3,4} The diagnosis of obesity in childhood is associated with numerous complications, including sleep apnea,⁵ insulin resistance, and cardiovascular mortality in adulthood.⁶ In addition, a diagnosis of psoriasis in obese children and adolescents may pose added risks, including abnormalities in blood lipid levels,^{4,7} hypertension, diabetes mellitus,^{2,8} and increased cardiovascular risk.⁹ It is striking that in a recent multicenter cross-sectional study of children and adolescents with mild and severe psoriasis,³ the odds of obesity were higher than those previously reported for adults with psoriasis.^{10,11}

An enhanced understanding of the etiology of the relationship between obesity and psoriasis is critical to the management of these metabolic risks. Currently it is thought that inflammation, particularly mediated through T_H1 and T_H17 (helper T cell) cytokines,^{12,13} may underlie both diseases; however, it has not been explored if this cytokine-induced inflammatory cascade is different in children and adolescents versus adults. Additionally, the temporal relationship between adiposity and psoriasis remains to be delineated. A historical cohort study in Denmark of girls aged 7 to 13 years found that increased body mass index (BMI) preceded the onset of psoriasis.¹⁴ The role of the normal pubertal increase in adiposity and the influence of increases in sex hormones on the onset of psoriasis remain to be investigated.

The relationship between obesity and psoriasis severity dictates that management should be directed toward both psoriasis and obesity in affected pediatric patients. In a small cohort study (N=10), 70% (7/10) of obese psoriasis patients experienced resolution of psoriasis symptoms following gastric bypass surgery.¹⁵ In a randomized controlled trial, Gisondi et al¹⁶ found that treatment of obese patients with moderate to severe psoriasis with both cyclosporine and diet control was superior to cyclosporine alone. Jensen et al¹⁷ noted that weight loss from a low-calorie diet correlated with improvement in psoriasis area and severity index score and quality of life in adults with psoriasis. However, a prior randomized investigator-blinded study did not find weight reduction through a hypocaloric diet regimen to be associated with reliable remission of psoriasis symptoms in obese psoriasis patients.¹⁸ Studies on the management of both psoriasis and obesity in children and adolescents are limited. In our recent pediatric study, improvement in psoriasis severity was not associated with lower odds of obesity.³ Future studies should be conducted in children to determine the utility of intensive lifestyle modification with weight reduction and diet control in impacting psoriasis severity and obesity in the pediatric population.

Indeed, the relationship between psoriasis and obesity may be more complicated than previously thought and may be influenced by external modifiers such as genetics, race, and geography. In our recent multicenter study, black and Hispanic patients with psoriasis were more likely to be obese than patients of other races. Obesity also was more common in psoriasis patients in the United States than in other countries.³

Ultimately, long-term cohort studies are necessary to fully elucidate the relationship between psoriasis and obesity; however, execution of these studies may be hindered by cost, time for data collection, need for recurrent evaluations, and limited access to optimal sampling (eg, blood and tissue) of psoriasis patients and controls. Future studies should also include measurement of waist circumference for

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The authors report no conflict of interest.

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calculation of waist circumference ratio and waist-to-height ratio, as they may be superior to BMI in predicting metabolic risk in children.¹⁹⁻²¹

With knowledge of the metabolic risks presenting in pediatric psoriasis patients, we ultimately must consider who bears the responsibility of screening patients and managing these comorbidities. The American Academy of Pediatrics has affirmed the National Heart, Lung, and Blood Institute's 2011 recommendations for cardiovascular health and risk reduction in children and adolescents.²² Not surprisingly, pediatricians and primary care physicians have classically led the way in identification and management of obesity and its complications in children; however, one cannot ignore the fact that children afflicted by moderate to severe psoriasis may be more likely to seek regular care from a dermatologist than from a primary care physician. A recent review of data from the National Ambulatory Medical Care Survey (2005-2009) of 11.4 million adult outpatient visits for psoriasis by Alamdari et al²³ revealed that blood pressure, BMI, cholesterol, and glucose levels are assessed at only 32%, 26%, 9%, and 6% of visits, respectively; percentages were found to be lower for assessments of blood pressure and BMI in individuals with psoriasis than for individuals without psoriasis, despite the known increased risk. Psoriasis patients were most likely to be screened for these comorbidities by primary care physicians.²³

Each patient-physician encounter should be viewed as an opportunity to assess and mediate these metabolic risks. Ultimately, coordination between primary care physicians and dermatologists will be required for optimal management of psoriasis in obese children and adolescents.

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QUICK POLL QUESTION



In what percentage of your pediatric patients with psoriasis and obesity have you measured fasting lipid levels?

- a. <1%
- b. 5%
- c. 10%
- d. >10%

Go to www.cutis.com to answer our Quick Poll Question and see how your peers have responded