

**Editors' Note:** Most physicians can relate to the challenges of the direct fundoscopic examination, likely including the emergency department (ED) physicians included in the study by Thulasi et al. As the authors highlight, the ED physicians picked up 0% of fundus abnormalities on direct fundoscopic examination vs 46% when reading fundus photographs. This seems argument enough for more widespread use of this technology. Drs. Shubhakaran et al. expand on the topic by describing the use of the fundoscopic examination in infectious disease.

*Megan Alcauskas, MD, and Robert C. Griggs, MD*

#### CHILDHOOD OBESITY AND RISK OF PEDIATRIC MULTIPLE SCLEROSIS AND CLINICALLY ISOLATED SYNDROME

**Julia Pakpoor, Oxford; Jina Pakpoor, Cambridge:**

Langer-Gould et al.<sup>1</sup> demonstrated a strong association between pediatric multiple sclerosis (MS)/clinically isolated syndrome (CIS) risk and weight. This association may be explained by vitamin D deficiency as it is widely recognized as an environmental risk factor for MS. Obese adolescents have been shown to be at particular risk of vitamin D deficiency.<sup>2</sup> Vitamin D is a fat-soluble vitamin with a reduced bioavailability in obese individuals due to its sequestration in body fat.<sup>3</sup> A US study of 68 multiethnic obese adolescents found low vitamin D status in 100% of girls and 91% of boys,<sup>4</sup> greater than in adolescents in general.<sup>5</sup> We postulate that the association between weight and risk of MS/CIS may be a consequence of greater vitamin D deficiency in obese individuals, which confers increased MS/CIS risk. Less likely, there may be a shared underlying risk factor in vitamin D deficiency. Elucidating the mechanism of this association and particularly the role of (preventable) vitamin D deficiency may become an important public health issue in light of the emerging childhood obesity epidemic which, as the authors note, may predict a rising incidence of pediatric MS/CIS.

© 2013 American Academy of Neurology

1. Langer-Gould A, Brara SM, Beaver BE, Koebnick C. Childhood obesity and risk of pediatric multiple sclerosis and clinically isolated syndrome. *Neurology* 2013;80:548–552.

2. Smotkin-Tangorra M, Purushothaman R, Gupta A, Nejati G, Anhalt H, Ten S. Prevalence of vitamin D insufficiency in obese children and adolescents. *J Pediatr Endocrinol Metab* 2007;20:817–823.
3. Wortsman J, Matsuoka LY, Chen TC, Lu Z, Holick MF. Decreased bioavailability of vitamin D in obesity. *Am J Clin Nutr* 2000;72:690–693.
4. Harel Z, Flanagan P, Forcier M, Harel D. Low vitamin D status among obese adolescents: prevalence and response to treatment. *J Adolesc Health* 2011;48:448–452.
5. Kumar J, Muntner P, Kaskel FJ, Hailpern SM, Melamed ML. Prevalence and associations of 25-hydroxyvitamin D deficiency in US children: NHANES 2001–2004. *Pediatrics* 2009;124:e362–370.

#### NONMYDRIATIC OCULAR FUNDUS PHOTOGRAPHY AMONG HEADACHE PATIENTS IN AN EMERGENCY DEPARTMENT

**Khichar Shubhakaran, Rekha Jakhar Khichar,**

**Jodhpur, India:** Thulasi et al.<sup>1</sup> studied the importance of fundoscopic examination in patients with headache. Fundus findings are well-described in noncommunicable diseases such as hypertension, diabetes mellitus, and congenital and hereditary metabolic disorders but not in infectious diseases.<sup>2</sup> Retinopathy has been reported in some infectious diseases like malaria, infective endocarditis, cysticercosis, HIV, and dengue.<sup>2,3</sup> Fundus findings would aid clinicians in rural settings or underdeveloped environments in reaching a diagnosis depending on the prevalent disease in that area.

Starting in 1879, ocular changes in malaria have been reported, but with varying results.<sup>2</sup> In a prospective study, we found that ophthalmoscopic abnormalities were not necessarily associated with mortality—except disc pallor—but they may indicate worse prognosis.<sup>4</sup> Of course, such fundus findings may give a clue to the diagnosis of malaria in endemic areas, but similar findings were also described in a smaller study regarding dengue hemorrhagic fever.<sup>2</sup>

Retinopathy in infectious diseases is an index of complications like hemorrhagic tendency or anemia. Further larger randomized trials are needed to determine their importance, but this type of examination may still be helpful in places where resources are scarce.

**Author Response: Beau B. Bruce, Valerie Biousse, Nancy J. Newman, Atlanta:** We thank Shubhakaran

# Neurology®

## Childhood obesity and risk of pediatric multiple sclerosis and clinically isolated syndrome

Julia Pakpoor and Jina Pakpoor  
*Neurology* 2013;81;1366  
DOI 10.1212/WNL.0b013e3182a7af5f

**This information is current as of October 7, 2013**

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://n.neurology.org/content/81/15/1366.1.full">http://n.neurology.org/content/81/15/1366.1.full</a>
<b>References</b>	This article cites 5 articles, 3 of which you can access for free at: <a href="http://n.neurology.org/content/81/15/1366.1.full#ref-list-1">http://n.neurology.org/content/81/15/1366.1.full#ref-list-1</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://www.neurology.org/about/about_the_journal#permissions">http://www.neurology.org/about/about_the_journal#permissions</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://n.neurology.org/subscribers/advertise">http://n.neurology.org/subscribers/advertise</a>

*Neurology*® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2013 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

