**Hyperpigmentation at diabetes technology sites may be indicative of evolving Addison’s disease**

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RJM, ACR, JHD were all involved in the clinical care of this patient. RJM wrote the initial draft of the manuscript. RJM, ACR and JHD contributed to editing of the manuscript and all approved the final submitted version.

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A 12-year-old boy with type 1 diabetes mellitus and coeliac disease reported 2-3 months of skin darkening at his insulin pump cannula and continuous glucose monitor sites (Figure 1). For the preceding nine months, he had localized itching and redness, which had been managed as allergic contact dermatitis by a dermatologist. He continued to use the dressings and these symptoms had improved. Hyperpigmentation was noted over his knuckles and periorally. He had no symptoms of adrenal insufficiency and was gaining weight (98th centile) and height (50th centile). A synacthen test had a suboptimal peak cortisol (370nmol/l [>450 considered sufficient] with a mildly raised adrenocorticotrophin hormone (ACTH, 76ng/l [0-46], sampled at 2pm), consistent with primary adrenal insufficiency. Serum sodium was low (132mmol/l [133-146]) with an inappropriately normal aldosterone (298pmol/l [110-1330]) and raised renin (660mU/l [15-127]), suggesting mineralocorticoid deficiency. Positive adrenal antibodies confirmed Addison’s disease. After three months of hydrocortisone and fludrocortisone replacement, no new hyperpigmentation was seen with fading of the existing areas.

Hyperpigmentation in primary adrenal insufficiency results from both increased ACTH and α-melanocyte (α-MSH); when an ACTH molecule is generated from pre-pro-opiomelanocortin, a molecule of α-MSH is also formed, stimulating melanin production by melanocytes (1). Hyperpigmentation occurs more readily at sites of trauma and friction, such as the knuckles and knees, but has not previously been associated with diabetes technology adhesives despite patients with type 1 diabetes being at higher risk of Addison’s disease (2). We speculate that increased melanin production and abnormal dermal melanin distribution from skin trauma with adhesive removal, similar to post-inflammatory hyperpigmentation (3, 4), may be causative. Allergic dermatitis may have contributed (5), but hyperpigmentation from diabetes technology dressings and elsewhere should raise concerns regarding Addison’s disease.

**Figure Legends**

**Figure 1**

Hyperpigmentation on (A) the abdomen and (B) the thigh of a 12-year old boy where medical dressing have been used to secure a continuous glucose monitor and insulin pump cannula, respectively.

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