LETTER TO EDITOR

Does metformin improve polycystic ovary syndrome symptoms through reduction in body iron stores?

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To The Editor – Tan et al. (1) found that metformin improved polycystic ovary syndrome (PCOS) symptoms irrespective of pretreatment insulin resistance or obesity. However, the mechanisms underlying this association are not clearly understood. We suggest that some of the involved mechanisms might be related to the reduction in body iron stores induced by metformin. Indeed, it has recently been found that metformin, increasing insulin sensitivity, may decrease intestinal iron absorption in patients with PCOS (2).

Mounting evidence indicates that higher body iron stores are associated with an increased risk of other insulin-resistant disorders such as type 2 diabetes (3). In fact, it has been demonstrated that increased iron stores may contribute to insulin resistance by reducing hepatic insulin extraction and metabolism (4), and by decreasing glucose uptake in muscle (5). On the other hand, induction of near-iron deficiency in carbohydrate-intolerant subjects has been shown to improve insulin sensitivity (6). Furthermore, a small intervention study in patients with type 2 diabetes and elevated ferritin levels showed that bloodletting, which resulted in a 50% reduction in serum ferritin concentrations, improved glycemia and insulin sensitivity (7).

Therefore, metformin-induced reduction in body iron stores may break the vicious circle of reduced insulin sensitivity, increased intestinal iron absorption, and further worsening of insulin sensitivity (2), thus improving symptoms in women with PCOS.

References

2. Luque-Ramírez M, Alvarez-Blasco F, Botella-Carretero JI, Sanchon R, San Millán JL & Escobar-Morreale HE. Increased body iron stores of obese women with polycystic ovary syndrome are a consequence of insulin resistance and hyperinsulinism and are not a result of reduced menstrual losses. Diabetes Care 2007 30 2309–2313.

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