

## Metformin use in renal disease

Muniba Khan,<sup>1</sup> Nadir Siddiqui<sup>2</sup>

Madam, Metformin is a biguanide oral hypoglycaemic agent approved as first line therapy for type 2 diabetes mellitus. Its superiority over the other hypoglycaemic agents stems from not precipitating hypoglycaemia, reducing cardiovascular and all-cause mortality rate,<sup>1,2</sup> being weight neutral or even having a slight weight loss effect. It is eliminated unchanged from the body by renal tubular secretion and glomerular filtration.<sup>3</sup>

Metformin Associated Lactic Acidaemia (MALA) is one of the most dangerous side effects of Metformin observed in patients with renal insufficiency, and is a life threatening condition. Due to MALA, the usage of this drug in the diabetic population with renal insufficiency has been restricted due to caution. I wanted to draw the attention of the reader to the fact that clinical trials, case reports and meta analyses over the past few years have shown, that the incidence of lactic acidaemia in diabetic patients with renal disease is extremely rare (< 10 per 100,000 patient years).<sup>4</sup> Studies also show that there is no increased risk of lactic acidosis in patients with mild to moderate kidney disease, i.e. eGFR > 30 ml/min/ m<sup>2</sup>. The evidence suggests that Metformin can be used for better glycaemic control in patients with mild to moderate kidney disease with periodic renal function

.....  
<sup>1</sup>Aga Khan University, <sup>2</sup>JPMC, Karachi.

**Correspondence:** Muniba Khan. Email: munibakhan11@gmail.com

monitoring.<sup>5,6</sup> In patients with eGFR < 30 ml/min/m<sup>2</sup>, however, the likelihood of lactic acidaemias increased and therefore Metformin usage is contraindicated.<sup>7</sup>

**Disclaimer:** None to declared.

**Conflict of Interest:** None to declared.

**Funding Disclosure:** None to declared.

### References

1. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34). UK Prospective Diabetes Study (UKPDS) Group. *Lancet* 1998; 352: 854-65.
2. Bailey CJ. Metformin: effects on micro and macrovascular complications in type 2 diabetes. *Cardiovasc Drugs Ther* 2008; 22: 215-24.
3. Sambol NC, Chiang J, Lin ET, Goodman AM, Liu CY, Benet LZ, et al. Kidney function and age are both predictors of pharmacokinetics of metformin. *J Clin Pharmacol* 1995; 35: 1094-102
4. DeFronzo R, Fleming GA, Chen K, Bicsak TA. Metformin-associated lactic acidosis: Current perspectives on causes and risk. *Metabolism* 2016; 65: 20-9.
5. Inzucchi SE, Lipska KJ, Mayo H, Bailey CJ, McGuire DK. Metformin in patients with type 2 diabetes and kidney disease: a systematic review. *JAMA* 2014; 312: 2668-75.
6. Ekström N, Schiöler L, Svensson AM, Eeg-Olofsson K, Miao Jonasson J, Zethelius B, et al. Effectiveness and safety of metformin in 51 675 patients with type 2 diabetes and different levels of renal function: a cohort study from the Swedish National Diabetes Register. *BMJ Open* 2012; 13; 2.
7. Lipska KJ, Bailey CJ, Inzucchi SE. Use of Metformin in the Setting of Mild-to-Moderate Renal Insufficiency. *Diabetes Care* 2011; 34: 1431-7.