

Use of metformin in treatment of dengue fever

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Dear Editor, Dengue Fever is the fastest spreading mosquito-borne viral disease globally, affecting greater than 100 million humans annually. Dengue also causes 20 to 25,000 deaths, primarily in children, and is found in more than 100 countries. Although most cases are asymptomatic, severe illness and death may occur.¹ According to the WHO, between 1st January to 27th September 2022, the National Institute of Health-Islamabad reported 25,932 confirmed dengue cases and 62 deaths nationwide.² 74% of these cases were reported during September alone. Of these, 32% were from Sindh, 29% from Punjab (including the Islamabad Capital Territory), 25% from Khyber Pakhtunkhwa (5506), and 14% from Baluchistan.²

The current treatment for dengue fever does not involve direct medication. Instead, the focus is on symptomatic treatment. Initial steps focus on bed rest and increased fluid intake to combat dehydration caused by vomiting. In severe cases, hospitalization for supportive care becomes necessary. Patients are monitored for dehydration and electrolyte balance, platelet counts, and blood pressure, with interventions such as transfusions if needed.³ New and improved treatments for dengue are being explored worldwide.

One of these emerging treatments is the efficacy of metformin in dengue treatment. A study published in 2018 showed that diabetic dengue patients who were metformin users were 33-40% less likely to develop severe dengue- according to WHO 2009 dengue criteria- than those who were not.⁴ From the metformin users 28.2% progressed to severe dengue whereas from the non-metformin users 42.4% progressed to severe dengue. The same study showed that metformin users had a significantly lower instance of severe bleeding than non-users.

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In obese patients the enzyme Adenosine Monophosphate (AMP) – Activated protein kinase (AMPK) is down regulated. Its down regulation results in the inhibition of lipid catabolism and increased de novo lipid synthesis, which are favourable conditions for viral replication and survival within host cells.⁵ The hypoglycaemic agent metformin –dymethybiguanide- controls glucose metabolism via activation of AMPK. Hence obese patients with dengue could benefit from it.

Bearing in mind the rising cases of dengue in Pakistan, we suggest that the possibility of an improved treatment with metformin, especially in obese patients, should be explored in the country. Metformin is cheap (locally priced at 35 rupees, brand name Glucophage), easy to administer and does not have any major side effects. With the rising threat of dengue and its increasing epidemics, it is crucial not only to take steps to prevent dengue breakouts but also to decrease mortality via better treatment plans.

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according to JPMA requirements.

HZY: Covered prevalence of dengue in Pakistan and its current treatments and formatted the references.