Brief Communication

Managing type 1 diabetes in remote and challenging locations in India

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ABSTRACT

Type 1 diabetes mellitus is a challenging situation for both physician and patient, as it requires a very disciplined lifestyle with regular monitoring and follow-up. It becomes even more difficult when facilities are limited. Manipur has a difficult terrain and due to lack of adequate facilities patients face frequent hypoglycemic episodes and hyperglycemic crises. Continuous availability of insulin is not possible at all times. The health care workers in the state are not fully aware of right practices and incorrect injection sites and erroneous techniques are also quite prevalent. Some quacks and traditional healers claim that they can cure diabetes by their indigenous preparation.

Key words: Diabetes, remote locations, type 1 diabetes

INTRODUCTION

Manipur is one of the North-eastern states of India with a total population of 25.7 lakhs. Around 60% of the geographical area of the state comprises of hills and valley, while the remaining 40% is plain. The ratio of urban to the rural population is 3:7 and the literacy rate in the state are 79.21%. The valley accommodates around 67% of the population of Manipur, which is engaged in agriculture. The economy is mainly dependent on agriculture but is also supported by several small scale industries. Around 76% of the population in Manipur is engaged in agriculture, but only about 9.41% of the area is cultivated in the state of which is around 52% is reserved in the valley. The staple diet of most of the people in the state is white rice that comprises almost the whole carbohydrate content. The glycemic index of white rice is around 89.

The electric supply is erratic in the region with frequent power cuts. The temperature can go up to 34°C in summer. Insulin storage is a big issue during the summer both at the pharmacy and at the patient’s residence. Insulin when stored at 25°C loses 2% potency every 6 months, while, at 40°C, it loses 2% potency every week. For this reason, the patients are advised to store insulin away from direct sunlight in a dark corner of a room, where they usually keep the insulin vial dipped up to the neck in water kept inside an earthen pitcher.

Continuous availability of insulin may not be possible in peripheries of the state because of highway blockade, which is a frequent problem in the region. It is also difficult for patients from hilly areas to attend the tertiary care centers located in the capital town because of the presence of a difficult terrain. In both major hospitals of the state, all the investigations are charged, and none is supplied free of cost to any type of patients. Insulin is also not provided free of cost to these patients, as done in some good hospitals of the country. Though recently laboratory facilities have come up in the peripheries, still specialized tests like lipid profile and HbA1c are not available in most parts of the state. The physicians have to rely on blood glucose (fasting and postprandial plasma) as HbA1c is not available in many places.

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The health care workers in the state are not fully aware of right practices and incorrect injection sites and erroneous techniques are also quite prevalent.[2] Some health care workers inject in the forearm or calves of the patients. Sometimes the angle of the injection is around 10–15°, thus leading to the insulin being delivered intradermally with unpredictable action and problems.

All guidelines recommend self-monitoring of blood glucose testing to be done 4–6 times a day, while glucometers are beyond the reach of most patients and for those who can afford, paired testing after every 2–3 days is suggested for cost cutting. The physicians have to rely on urine glucose testing for most patients, which depends on the renal threshold (180–200 mg%). Thus, hypoglycemia cannot be detected with these techniques, and they do not correlate with plasma glucose. As a result, glycemic targets are difficult to achieve, and the patient condition is pushed to more severe complications.

For mild cases of hypoglycemia, the patients are advised to take glucose or table sugar and if the patient is drowsy, he/she is advised to apply honey on the buccal mucosa. These techniques are frequently applied without any scientific basis and most healthcare workers don’t have any knowledge about glucagon injection.

Some quacks and traditional healers claim that they can cure diabetes by their indigenous preparation and also some neutraceutical firms are promoting their food supplements in the market. Another interesting concept in the region is that insulin is considered harmful to the body and is believed to cause kidney damage, and for this reason many patients stop insulin and ultimately progress towards diabetic ketoacidosis.[3]

**SUMMARY**

Managing type 1 diabetes mellitus with a limited facility and difficult terrain is a tough job in Manipur, with frequent hypoglycemic episodes and hyperglycemic crises, along with complications and early death.

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