Type-1 diabetes is an autoimmune disease characterized by hyperglycemia, inability to produce insulin due to self-destruction of beta cells in the pancreas. The epidemic of type-1 diabetes causes irreversible suffering like retinopathy, nephropathy, neuropathy, foot complications, high blood pressure, etc, and put patients on a life sentence with insulin. The common perception in medical science is that sugar levels cannot be normalized without the help of medication. However, in the present study we examined a type 1 patient by putting her on a diet plan with regular follow ups and studied all diabetes-related biochemical parameters. We were successfully able to eliminate her medication and insulin dependency.
four types of raw vegetables which weigh equal to body weight (in kg) × 5 = ... (gm) along with a normal cooked meal. Dinner is calculated the same way as lunch. In addition to this, soaked nuts and sprouts are also a part of the diet and the quantity of these also depend on the patient’s body weight (kg)... (gm). Sunshine is also an integral part of the prescribed diet. Packed and refined food, nutritional supplements, non-steroidal anti-inflammatory drugs (NSAIDs) and dinner at late hours are strictly denied.

After five months, she was recommended to follow a more restricted diet plan mainly consisting of fruits and raw vegetables. Dairy products and cooked food were completely eliminated during intensive intervention [8]. A regular monitoring of glucose (fasting and post prandial) was carried out during intervention.

**Biochemical parameters**

**Before intervention:** The patient had been suffering from type 1 diabetes for eight years as was diagnosed in Dec 2011. She was prescribed 28 units before breakfast and 22 units before dinner of Mixtard insulin, and 10 units before lunch of Actrapid. In addition to that, she was taking 1000 mg of metformin per day. Her blood sugar level varied from 156 ± 24 mg/dl with total insulin (60 Unit) and 159 ± 5 with 25 U insulin. Her HbA1c was 9.3% in 2011 and mean plasma glucose was 197 at the time of diagnosis (Table 1).

**Post intervention:** The intervention was divided into two phases.

**Basic intervention:** Where cooked food was offered along with raw food (Aug 2018-Jan 2019).

**Intensive intervention:** Where no cooked food was given (4-6 Jan 2019).

Her dependency on insulin decreased gradually from 60 U to 25 U during basic the intervention phase, and eventually to nil during intensive intervention phase. Her C-peptide level was 0.93 (0.81-3.85) ng/ml, mean plasma glucose was 160 and Glutamic acid decarboxylase (GAD) 7 U/ml (value <30 is considered negative) after dietary intervention (Table 1).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Date</th>
<th>Insulin</th>
<th>C-peptide</th>
<th>GAD</th>
<th>HbA1c (%)</th>
<th>Blood sugar in average (mg/dl)</th>
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</thead>
<tbody>
<tr>
<td>At the time of diagnosis (2011)</td>
<td>(28.12.11)</td>
<td>Mixtrad</td>
<td>-</td>
<td>-</td>
<td>9.3</td>
<td>160*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28 U+22 U/day</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Actaprid 10 U/day</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic intervention (2019)</td>
<td>Till mid-August</td>
<td>50 U</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>156*</td>
</tr>
<tr>
<td></td>
<td>From mid Aug to Dec</td>
<td>25 U</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>159*</td>
</tr>
<tr>
<td>Intensive intervention (2019)</td>
<td>4th Jan</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>5th Jan</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>6th Jan</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>176</td>
</tr>
<tr>
<td>At the time of preparation of manuscript</td>
<td>-</td>
<td>0</td>
<td>0.93</td>
<td>7</td>
<td>7.2</td>
<td></td>
</tr>
</tbody>
</table>

Note: GAD = Glutamic Acid Decarboxylase, Parenthesis (-) represents the non-availability of data, *Glucose levels with insulin therapy

**Discussion**

Type 1 diabetes has been neglected for a long time and its nationwide prevalence is not yet known. The growing number of type 1 cases is a cause of concern as its treatment is difficult in comparison to that of type 2 [11]. In this article, we show a comprehensive analysis by stating the pre and post diabetic condition of a proband severely affected with type 1 diabetes who approached us using the Diabetes 72 app in Jan 2019. Her HbA1c reading was close to 8 every time, which is on the higher side. Higher values of HBA1c are suggestive of diabetic complications [12] which are evident by her eye and kidney problem. Her insulin dependency reduced to less than half after a basic dietary intervention, and finally, to nil after intensive intervention. Originally, when she was diagnosed as diabetic, her insulin intake was 60U in 2011 per day, and it came down to 25U in 2018 per day owing to dietary intervention. Presently, she is no longer dependent on insulin. Her glucose levels are also in normal range without insulin (184 ± 9). Her GAD values are suggestive of the reversal of type-1 diabetes. She adheres to regular follow ups. Evidences of cases of type 1 diabetes due to disturbed lifestyle are increasing [13]. Dietary intervention is a great help to medical science in curbing type 1 diabetes in a higher percentage, without causing any side effects. The complete reversal of chronic type 1 diabetes through dietary intervention is a ray of hope to many patients who are in the trap of medicines.

**Conclusion**

Diet plays a major role in the reversal of autoimmune diseases like type 1 diabetes. If left untreated, diabetes type 1 can lead
to severe complications. Type-1 diabetes was once thought to be irreversible and progressive after diagnosis, but evidences suggest it can be reversed by following an appropriate diet plan. Here, we successfully treated a patient suffering from type 1 diabetes with complications by prescribing a customized diet plan. We searched major literature databases like Research Gate, Pubmed and Google Scholar, but could not find any type 1 reversal study of this kind. Therefore, this is the first report of a diabetes type 1 reversal in the world as per best of our knowledge.

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References


*Correspondence to

Biswaroop Roy Chowdhury
Medical Nutritionist
Indo-Vietnam Medical Board
India