OPEN ACCESS Freely available online

ISSN: 2572-5629
Diabetes Case Reports

Commentary

Insulin Pump Therapy in Type 1 Diabetes and Effective Glycemic Controls

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DESCRIPTION

An increasingly common type of insulin replacement therapy is insulin pump therapy. Which can enhance the blood sugar control since the insulin supply from insulin pumps can more nearly resemble to what our body does normally. A more adaptable way of life comes along with such control. But keep in mind that the pumps still need a lot of user input. To control their blood sugar levels, all people with Type 1 diabetes and many people with type 2 must take insulin. Currently, there are two ways to inject it: Using an insulin pump or a needle and pen. An insulin pump is a little electronic gadget. Through a little tube that is inserted beneath the skin, it distributes insulin.

Therapeutic advances

The management of diabetes is adjustable with insulin pump therapy. It allows basal insulin to be adjusted to daily needs and circadian rhythms, provides more precise therapy for meals and exercise, and, when used in conjunction with continuous glucose monitoring, enables the delivery of glucose responsive insulin. Treatment optimization is made possible by the capacity to download and transmit data for analysis. Modern pumps are easier to use and provide a better user experience. Studies show that pump therapy is effective in enhancing glycemic control and decreasing the incidence of hypoglycemia without escalating episodes of diabetic ketoacidosis. They raise quality of life as well. Recent research indicates that pump therapy may help to lessen diabetes-related micro vascular and macro vascular problems.

When opposed to a Multiple Daily Injection (MDI) treatment, employing an insulin pump has many benefits. With fewer injections, more accurate and flexible insulin dosing is possible with insulin pump therapy. Because insulin pumps offer better glucose control and a more flexible lifestyle than MDI therapy, particularly during meals and social circumstances, many people with type 1 diabetes report using them. In both pediatric and adult populations with type 1 diabetes, insulin pump therapy has been shown to enhance glycemic control and reduce hypoglycemia when compared to MDI in numerous trials and systematic reviews. Although some randomized controlled trials found no difference between insulin pump therapy and MDI in glycemic control in young children (7 years of age), parental satisfaction with insulin pump therapy is high.

Additionally, insulin pumps have a lot of benefits for controlling the youngest children's low insulin needs and erratic eating patterns, indicating that insulin pump therapy may be the best option for many young children with type 1 diabetes and their families. A pump can only be used if any caregivers can be prepared to take the necessary precautions to use it safely. Blood glucose monitoring is crucial because it will alert if the pump or infusion set stops functioning properly. High blood sugar levels and the extremely serious and hazardous Diabetic Ketoacidosis (DKA) can result from this. Regular blood glucose monitoring will warn if any of the danger and stop the formation of ketones.

Risk and complications in insulin pumps

Complications are rare with insulin pumps. Pumps offer more accurate insulin dosages than injections, thus they may be less dangerous for those who have trouble calculating their amounts.

Cons of using an insulin pump may include:

- Higher cost than injections.
- Pumps breaking or tubing becoming disconnected.
- Inability to conceal the tubing or pump with non-patch types.

The possibility of installing the pump wrongly exists as well. It's essential to correctly utilize the insulin pump and to keep checking the blood sugar frequently. If not, then it's possible that pancreas didn't make enough insulin require in body, which might be risky and even fatal. For setup instructions, first-time users should ask their healthcare professional.

CONCLUSION

Because insulin pump therapy can nearly replicate physiological insulin secretion, it has been shown to be the preferred treatment for Type 1 Diabetes (T1D) patients. Furthermore, research has

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Received: 06-Jun-2022, Manuscript No. DCRS-22-17513; **Editor assigned:** 09-Jun-2022, PreQC No. DCRS-22-17513 (PQ); **Reviewed:** 29-Jun-2022, QC No DCRS-22-17513; **Revised:** 09-Jul-2022, Manuscript No. DCRS-22-17513 (R); **Published:** 18-Jul-2022, DOI: 10.35841/2572-5629.22.7.125

Citation: Lewis T (2022) Insulin Pump Therapy in Type 1 Diabetes and Effective Glycemic Control. Diabetes Case Rep. 7:125.

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demonstrated that individuals with T1D prefer pump therapy to injectable therapy and that it enhances quality of life. Although there have been less research examining Continuous Subcutaneous Insulin Infusion (CSII) in Type 2 Diabetes (T2D) patients, it appears that many of these findings may also apply to them.

Regardless of age, insulin pump therapy seems to be safe and effective for T1D patients. To help and improve metabolic regulation and quality of life, future developments will incorporate closed loop and different decision support systems.