EXAMINING the Evidence

Insulin pump therapy in gestational diabetes; sildenafil for anorgasmia

THE QUESTION: Is insulin pump therapy safe and effective for maintaining glycemic control in women with gestational diabetes mellitus (GDM) or type 2 diabetes requiring large doses of insulin?

PAST STUDIES: These have shown that insulin pumps have been well tolerated in gravidas with type 1 diabetes. However, there has been no substantial evidence on the use of insulin pumps in patients with GDM or type 2 diabetes. For these gravidas, the current standard of care is to monitor glucose levels 4 times per day and to administer regular insulin injections several times a day, as required.

THIS STUDY: Gravidas with GDM or type 2 diabetes were examined over a 4-year period. Parturients on insulin pump therapy were compared to gravidas who did not use an insulin pump. Patients were matched for ethnicity and diabetes type and monitored at a hospital in New Zealand. Of 251 Polynesian, European, and South Asian women, 30 used an insulin pump. None of the patients experienced severe hypoglycemia and 79% had improved glycemic control within 1 to 4 weeks. However, 2 women discontinued pump therapy.

Gravidas using a pump had greater insulin requirements than those not using a pump (median maximum 246 units/day and 130 units/day, respectively) and greater maternal weight gain (10.6 kg and 5.0 kg, respectively). Infants of mothers using insulin pumps were more likely to be admitted to the neonatal care unit, but were neither significantly heavier nor more likely to experience hypoglycemia than control subjects.

FIND THIS STUDY: December 2001 issue of *Diabetes Care;* abstract online at www.diabetes.org/diabetescare.

WHO MAY BE AFFECTED BY THESE FINDINGS? Parturients with GDM or type 2 diabetes.

EXPERT COMMENTARY: This study addresses an important clinical issue: Although insulin pumps are safe and effective for use in gravidas with type 1 diabetes, it is not clear whether they should be used in women with GDM or type 2 diabetes. Unfortunately, this study does little to clarify this issue. As the authors point out, this was not a clinical trial, but rather a "service audit." As such, only 2 conclusions can be reasonably extracted from the reported data. First, there were no serious adverse events in gravidas using the insulin pump. Second, an improvement in glycemic control was evident in all 14 women for whom results of self-glucose monitoring was available both before and after initiation of pump therapy. However, it is likely that this improvement was not a result of the pump, but rather of improved overall obstetric care, including more intensive glycemic monitoring and more aggressive insulin dosing.

To consider the use of insulin pumps in gravidas with GDM or type 2 diabetes, researchers must seek to answer the following:

- Are pumps safe in this population?
- Do pumps effectively control blood sugar, decrease the incidence of fetal macrosomia and/or cesarean delivery, and prevent such complications as shoulder dystocia?
- How does pump therapy compare to current regimens of subcutaneous insulin injections?
- Are patients more or less satisfied?

Potential advantages of the insulin pump over subcutaneous insulin include fewer injections, a continuous insulin infusion, and improved patient satisfaction, which could lead to improved compliance. A possible disadvantage of the pump may be infection at the injection site.

CAVEATS: This study is marred by several major methodological, statistical, and reporting errors, which include the following:

- The cases and controls were not correctly assigned. One woman was treated with the insulin pump in 2 pregnancies and included in the analysis twice. Controls included women with "preexisting tablet-treated type 2 diabetes," whereas all cases were treated with insulin. Seven women with type 1 diabetes also were treated with insulin pumps, but it is not clear from the text whether or not these women were included in the analysis.
- Gravidas with GDM or type 2 diabetes were seen monthly until 28 weeks' gestation, fortnightly until 36 weeks' gestation, and then weekly until term. By U.S. standards, this represents suboptimal antenatal care for high-risk women.
- There was no power analysis, but it is likely that the study lacked the patient numbers to draw any conclu-

sions about the use of insulin pump therapy in this patient cohort.

■ There was a "lack of quality measures of hypoglycemia." Researchers stated that "problems with precision and reporting were frequently demonstrated by inconsistencies between laboratory and self-glucose monitoring results."

THE BOTTOM LINE: Given the difference in pathophysiology between type 1 diabetes (due to an absolute deficiency of insulin) and GDM or type 2 diabetes (characterized by increased peripheral resistance to circulating insulin), extrapolation from gravidas with type 1 diabetes may not be valid. Well-designed, prospective, clinical trials are still needed to assess the value of insulin pump therapy in parturients exclusively suffering from GDM or type 2 diabetes. Future studies will likely demonstrate that insulin pumps are equally—if not more—effective in achieving adequate glycemic control in such women as compared with the current regimen of regular subcutaneous insulin injections. Until such studies are available, parturients with GDM or type 2 diabetes may be managed with intermittent self-administered subcutaneous insulin injections.

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THE QUESTION: Is sildenafil an effective treatment for arousal disorder in premenopausal women?

PAST STUDIES: These have shown that sildenafil is not as promising in women as in men. However, previous trials examined its usefulness in postmenopausal women. Little research has been conducted in premenopausal women.

THIS STUDY: The benefits of sildenafil treatment were examined in 53 women, ages 22 to 38, who had developed arousal disorders and were unable to achieve orgasm. Included in the trial, were heterosexual women who had been incapable of experiencing vaginal lubrication or genital sensation for a period of 6 months or more. Normal ovarian function was documented by ultrasonography. Women on oral contraceptives or hormone therapy and those who did not have a sexual partner were excluded from the trial. Also, women with medical conditions, including hypertension, diabetes, cancer, alcohol abuse, and liver disease, could not enroll in the study.

In a double-blind crossover study design, patients were followed monthly for 3 months and treated with 25 mg of sildenafil, 50 mg of sildenafil, and placebo in a randomized fashion. Each participant took either dose of sildenafil or placebo 1 hour before planned intercourse. The researchers used a 5-point scale to detect changes in sexual behavior. The results: Women reported increased sexual arousal, enjoyment, and frequency of sexual fantasies with both doses of sildenafil compared with placebo (4.2 versus 2.6, respectively). The frequency of orgasm also improved significantly with both doses of sildenafil compared with placebo (3.8 versus 2.4, respectively).

FIND THIS STUDY: June 2001 issue of *British Journal of Obstetrics and Gynaecology*; abstract online at www.elsevier.com.

WHO MAY BE AFFECTED BY THESE FINDINGS? Healthy young women with normal hormones and libido experiencing sexual arousal disorders. Additionally, postmenopausal women with normal sexual desire, steady partners, and hormones replaced to normal levels *may* respond well to sildenafil. Clearly, future research is needed in this postmenopausal population.

EXPERT COMMENTARY: As female sexual dysfunction is discussed more widely on the talk show circuit, women are being encouraged to seek medical attention and treatment for this complex problem. Unfortunately, little research exists to better understand and treat sexual dissatisfaction among women, specifically arousal and orgasmic disorders. This trial, however, is one step toward the development of effective therapeutic strategies to combat these issues. The researchers successfully isolated arousal deficiencies from desire and orgasmic disorders in a group of young premenopausal women. The participants responded well to a treatment series of sildenafil. The medication regulates smooth muscle contractions by selectively blocking phosphodiesterase type 5. It also permits vasodilation, resulting in subsequent clitoral, vulvar, and vaginal erectile tissue engorgement.

The results of this trial are most interesting in that previous trials of sildenafil did not demonstrate any improvement in postmenopausal women with sexual dysfunction. However, those trials did not define arousal disorder as strictly as the authors of this study. Based on sildenafil's mechanism of action, postmenopausal women with vascular disease, hypertension, and diabetes—a population similar to males with erectile dysfunction—who have normal libido and hormones, may be ideal candidates for sildenafil therapy.

CAVEATS: In this study, 4 women stopped taking sildenafil 50 mg, 2 women stopped taking sildenafil 25 mg, and 2 women stopped taking placebo due to vision problems, headaches, and fear of adverse reactions.

THE BOTTOM LINE: Physicians may consider prescribing 25 to 50 mg of sildenafil to premenopausal women with normal hormones and libido who experience difficulty with arousal, lubrication, and genital sensation.

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