Hot-Tub Therapy for Type 2 Diabetes Mellitus

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To the Editor: Physical exercise is effective therapy for patients with type 2 diabetes mellitus. Therefore, my colleagues and I asked the following question: Would the effects of partial immersion in a hot tub simulate the beneficial effects of exercise? We asked eight patients (five men and three women; age range, 43 to 68 years; mean [±SD] weight, 104.7±53.2 kg) to sit in a hot tub at an athletic facility with water up to their shoulders. They used the hot tub for 30 minutes a day, six days a week, for three weeks between September 1998 and April 1999 (Table 1). The patients' diets, exercise routines, and therapy (three patients were taking insulin, and all were taking various oral hypoglycemic drugs) were stable for eight weeks before the study and while the study took place.

TABLE 1. CHARACTERISTICS OF THE EIGHT PATIENTS AND RESULTS OF THREE WEEKS OF EXPOSURE TO A HOT TUB.

AGE	SEX	DURATION OF DIABETES	MEDICATIONS	BODY WEIGHT (BEFORE/AFTER EXPOSURE)	FASTING PLASMA GLUCOSE (BEFORE/AFTER EXPOSURE)*	GLYCOSYLATED HEMOGLOBIN (BEFORE/AFTER EXPOSURE)†
yr		yr		kg	mg/dl	%
43	M	14	Glyburide, metformin hydrochloride	83.2/80.9	190/186	13.6/12.7
50	M	13	Glyburide, troglitazone, insulin	201.8/199.1	109/66	8.6/7.7
51	M	9	Glyburide, metformin hydrochloride, insulin	175.0/168.2	231/181	12.2/11.1
54	F	9	Metformin hydrochloride, insulin	60.9/61.8	207/156	17.4/14.8
57	F	8	Glipizide, metformin hydrochloride	64.5/64.5	197/155	11.0/11.1
57	M	3	Glyburide, troglitazone	75.0/73.6	165/162	8.6/7.6
63	M	11	Glipizide, metformin hydrochloride	91.8/91.8	158/160	9.1/8.1
68	F	9	Glyburide, metformin hydrochloride, troglitazone	85.5/84.1	197/203	9.5/8.9

*To convert the values to millimoles per liter, multiply by 0.05551.

†The normal range was 4 to 8 percent.

The temperature of the water in the tub ranged from 37.8°C to 41.0°C, and the patients' oral temperature rose an average of 0.8°C during each session. After 10 days, one patient reduced his dose of insulin by 18 percent to prevent hypoglycemic reactions. During the three-week period, the patients' weight decreased by a mean of 1.7±2.7 kg (P=0.08). Their mean fasting plasma glucose level decreased from 182±37 mg per deciliter (10.1±2.0 mmol per liter) to 159±42 mg per deciliter (8.8±2.3 mmol per liter) (P=0.02), and their mean glycosylated hemoglobin levels decreased from 11.3±3.1 percent to 10.3±2.6 percent (P=0.004).

When the water temperature was greater than 40°C, the patients reported feeling hot. Patients became dizzy on exiting the tub when they hurried to stand. Therefore, they were routinely helped from the tub and seated until they could safely walk. As the study progressed, they reported improved sleep and an increased general sense of well-being. Our results suggest that hot-tub therapy should be further evaluated as a therapy for patients with type 2 diabetes mellitus. It may be especially helpful for patients who are unable to exercise. The benefits could result from increased blood flow to skeletal muscles.[1]

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References

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