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## CASE HISTORY

### Hormone Therapy and Supplements Bolster Weight-Loss Efforts

By William Davis, MD, FACC

*William Davis, MD, FACC, is an author, lecturer, and cardiologist who specializes in coronary disease regression and strategies to improve human performance. He practices in Milwaukee, WI, and can be contacted at [Heartprotection@aol.com](mailto:Heartprotection@aol.com).*

Mike is a 57-year-old man who two years earlier had survived a heart attack that converted the bottom third of his heart muscle to scar tissue. His cardiologist at the time advised him that the damage was done and that the closed artery responsible for the heart attack could not be opened. He would be observed for signs of an impending second heart attack, and was prescribed aspirin, long-acting nitroglycerin tablets, and a beta-blocker. No information was provided concerning the causes of his coronary disease.



Dissatisfied with the lack of information provided about the causes of his heart disease, Mike came to me for a consultation.



He lumbered into my office and plopped his 303-pound frame into a chair, still huffing from the modest effort of walking 25 feet down the hallway. Mike and I talked at length about how he needed to change his lifestyle and eating habits, as well as correct his lipoprotein patterns (which included low high-density lipoprotein (HDL), dangerous “small” low-density lipoprotein (LDL) despite a relatively favorable LDL, and elevated homocysteine). He was advised to follow a low-fat, high-fiber, plant-based diet, to forgo processed foods, and to begin an exercise program. Mike proved intolerant to the statin drugs prescribed to lower LDL and therefore relied on oat bran, raw almonds, fish oil (omega-3 fatty acids), soy protein powder, and niacin, as well as folic acid and B-complex vitamins for his high homocysteine.

Initially, I had little confidence that Mike would succeed in giving up his sedentary habits and snack-filled TV watching. To my surprise, Mike took the exercise advice to heart and began a vigorous program of walking on a treadmill, using an elliptical machine, and weight training with relatively light weights at high repetitions. He varied his routine but managed to exercise 45-60 minutes, five days a week.

Over a period of months, I saw Mike three more times in my office. The transformation on each visit was impressive. After six months, Mike had lost 60 pounds. He strode confidently into the office and sat upright, eager to talk about his health. He had come to love exercise, as he saw the power it had to change his health, mood, and appearance. His wife jokingly complained that he loved to exercise too much. Exercise had empowered this once tired, lethargic, overweight man to regain control of his life.

Despite his weight-loss success, Mike eventually reached a “plateau,” with his weight stabilized at 243 pounds. Although he felt great compared to when he began the program, Mike thought he could still make significant improvements in energy, weight, and appearance, and in his lipoprotein patterns. On further questioning, Mike admitted to struggling to achieve erections over the past two years and losing interest in sex. He also described feelings of being overwhelmed and sad at times, despite his outwardly upbeat appearance. Mike agreed to undergo hormonal testing, which revealed his hormone levels to be as follows (“normal” reference ranges are shown in parentheses):

<b>Total testosterone</b>	36 ng/dl (270-1070 ng/dl)
<b>Free testosterone</b>	0.23 ng/dl (0.80-3.50 ng/dl)
<b>DHEA-s</b>	205 ug/dl (63-444 ug/dl)
<b>Estradiol</b>	23 pg/m (0-44 pg/m)

It was clear from Mike's hormone tests that he was profoundly deficient in both total and free testosterone, as well as low in DHEA. His estradiol level was within an acceptable range and therefore not at fault for Mike's impotence and low moods.

Mike therefore was prescribed a topical testosterone cream (50 mg twice a day) and DHEA (50 mg at bedtime). He also started L-arginine (6000 mg twice a day on an empty stomach), in powder form and dissolved in water to augment erectile potency. To further assist his weight-loss efforts, Mike was advised to add calcium pyruvate (2500 mg twice a day), with one dose to be taken 30 minutes before exercise to enhance exercise stamina and endurance, and to accelerate weight loss.

Within two months of beginning this regimen, Mike lost another 15 pounds. A body-fat analysis performed in the office showed that Mike had actually lost 23 pounds of fat while gaining 8 pounds of lean muscle mass. The "blue" moods that had plagued him previously had lifted completely, and he was no longer bothered by minor irritations that had previously triggered angry outbursts. The quality of his sleep also improved. Moreover, Mike showed further improvements in his lipids and lipoproteins, with an increase in HDL and reductions in his LDL, "small" LDL, and triglycerides.



## Discussion

Lifestyle management is the foundation of any health program. In this case, the patient greatly benefited from a program of proper diet and exercise, with at least partial improvement in the lipoprotein patterns that caused his coronary artery disease and heart attack. As is so common, however, even spectacular initial results often stall, leaving the patient short of his initial weight-loss goal. In this case, Mike's weight was a major contributing factor to the undesirable lipoproteins that led to his heart attack.



In aging males, testosterone levels decline by 40% between the ages of 40 and 70.<sup>1</sup> Diminished testosterone levels are associated with decreased muscle mass, increased fat mass, loss of libido, and depression, but testosterone replacement can reverse these effects.<sup>2,3</sup> Mike's free and total testosterone levels were clearly in the "hypogonadal" (vastly diminished) range, but many males experience similar symptoms at the low end of "normal" values. Another useful strategy, though one not required in this case, is to inhibit the conversion of testosterone to estrogen that results in increased estradiol levels (>30 pg/ml). This can be achieved with the nutritional supplement chrysin,<sup>4</sup> as well as with prescription agents such as Arimidex® (though this is not an FDA-approved indication for this drug).

Likewise, DHEA levels in men and women decline gradually beginning at the end of puberty, at a rate of approximately 10% per decade.<sup>5</sup> Oral DHEA replacement can lead to increased muscle mass and strength in males, and decreased fat mass and improved mood in both sexes.<sup>6,7</sup> In my experience, one of DHEA's most beneficial effects is its uplifting effect on mood, generally encouraging feelings of well-being and hopefulness. Curiously, this effect develops subtly and the user often is not fully aware of it until the replacement DHEA is stopped, with improvement once again with resumption of use. Anecdotally, these improvements are correlated with DHEA-s (DHEA sulfate) levels of 300 ug/dl or more.

Calcium pyruvate was used in this program to advantage. This safe supplement has been shown to accelerate weight loss, particularly when combined with a program of regular exercise. Calcium pyruvate has the additional effect of making exercise more pleasurable and less fatiguing, and allowing for faster recovery after exercise.<sup>8</sup>

In practical use, combination hormonal therapy of testosterone and DHEA in males (DHEA, progesterone, and occasionally testosterone in low doses in females) is a useful strategy for weight loss that can be particularly beneficial when excess body fat has implications for health—in this case, lipoprotein disorders and coronary disease. By losing weight, Mike was able to avoid having to use other prescription drugs to correct his lipoprotein disorders, and quite likely diminished his future risk of heart attack. Mike's enhanced sense of well-being, increased stamina, and heightened libido are all "bonuses" that will likely provide the motivation for him to maintain his treatment regimen over the long term.

## Conclusion

Hormonal replacement can provide useful tools for weight loss when diet and exercise efforts have been exhausted. Testosterone and DHEA replacement in men provides benefits in lipids, mood, and physical energy as well, all of which can improve overall health. These strategies also can be used to correct lipoprotein patterns that are responsible for heart disease.



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