A Case of the Re-Emergence of Panic and Anxiety Symptoms After Initiation of a High-Protein, Very Low Carbohydrate Diet

A CASE REPORT

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Generalized Anxiety Disorder

• Prevalence: >4 million Americans or 4-6%

• 90% of GAD patients have a lifetime history of another psychiatric diagnosis, particularly depression

• Twice as many women than men

* NIMH
Panic Disorder

- Prevalence: 2.4 million Americans or 0.88%

- 44% of population experience panic lifetime

- 1/3 of PD – disabled, 1/3 had at least 1 SA, 1/3 use alcohol or drugs

* NIMH
Case Report

• Ms. A, 37 year old woman

• 2 wk h/o daily episodes of increasing panic attacks

• (Lightheadedness, feeling "sick to her stomach, chest tightness, dizziness, an overwhelming sense of fear without depression)

• Sudden onset, lasted 30-45 mins.
  (precipitant = imminent vacation plan)
Past Psychiatric History:

• Similar attacks 4 yrs ago

• Extensive medical work-up, including Normal echocardiogram, ECG, upper endoscopy, and blood work

• She had had 6 months of daily attacks, during which she severely restricted her trips outside her home

• No h/o psychiatric hospitalization or symptoms of any other psychiatric illness
Contd…

• Twice-weekly counseling for 3 months and Alprazolam (Xanax) for 1 year

• Ms. A had been off Alprazolam for 2 years before the reemergence of symptoms

• No other medications/medical conditions
Treatment

- Alprazolam (Xanax), titrated to 1.0 MG QID and Sertraline (Zoloft) 50 MG/day
- Her panic attacks and phobic avoidance resolved completely over the ensuing 10 years
At the age of 47…

- Patient decided to go on Atkins diet, she weighed 252 lbs. and had struggled with weight for most of her life.

- After starting Atkins diet, she felt “shakiness”, eventually progressed to a full-fledged panic attack later.

- She increased Sertraline to 100 MG but continued to have frequent panic attacks, and there was a marked increase in her baseline level of anxiety over next 4 wks.
Contd…

• She believed that diet was connected to the symptoms, but didn’t stop the diet as she had lost 17 lbs.

• Ultimately began eating carbohydrates and quit the diet due to her increased anxiety

• Symptoms improved gradually, all symptoms were resolved after several days and did not recur
Discussion

• Both anxiety disorders and dieting are common in the US and more common in women

• The lifetime prevalence for anxiety disorders and panic disorder are ~ 19.2% & 2%, respectively*

• The point-prevalence of dieting among U.S. adults is 16.5%, with the highest prevalence being among white women (21.1%)*

*(Paeratuki S, 2002)
Contd…

• Many diets involve severe restriction of carbohydrate intake

• 25 million Americans are following the Atkins diet, 1/3 of American adults restrict Carbs (*Gloede W, 2003)
THE ATKINS LIFESTYLE FOOD GUIDE PYRAMID™

Whole grain foods such as — barley, oats and brown rice

Vegetable and seed oils, cheese and dairy, nuts and legumes

Fruits such as — blueberries, raspberries, pears and avocados

Vegetables such as — salad greens, broccoli, cauliflower, asparagus and spinach

Protein sources such as — poultry, fish, beef, pork, and soy products

INCREASE OPTIONS WITH ADDITIONAL EXERCISE

HERE'S WHAT YOU DO:

1. Limit and control certain carbohydrates to achieve and maintain a healthy weight.
2. Choose carbohydrates wisely (vegetables, fruits, legumes, whole grains), avoiding refined carbohydrates and foods with added sugars.
3. Eat until you are satisfied:
   — to maintain weight, eat in proportion to the pyramid.
   — to lose weight, focus on protein, leafy vegetables and healthy oils.
4. Everyone’s metabolism and lifestyle are different. Discover your individual carb level to achieve and maintain a healthy weight. Raise this level with additional exercise.

NO
ADDED SUGARS & HYDROGENATED OILS
Contd…

• Dr. Atkins noted that his diet may cause fatigue, faintness, palpitations, headaches, and cold sweats during first 3 days (withdrawal from foods to which the patient was addicted)

• This phenomenon probably does not explain this patient's symptoms, since her symptoms lasted for 4 wks.
Possible mechanisms

Atkins diet may worsen panic disorder by induction of ketosis and effect on brain serotonin levels.

Severe Carb Restriction → Mobilization of body's Glycogen stores → KETOSIS

Dehydration: headache, confusion, lethargy, dizziness, irritability
Short-term Dieting

Plasma Concentration Tryptophan

Carb Consumption

Plasma Concentration Tryptophan

Serotonin Synthesis and Release in Brain

*Attenburrow MJ., Psychol Med 2003
*Wurtman RJ., Am J Clin Nutr 2003
• Therefore, it is likely that a low-carb diet would lower brain serotonin levels

• Experimental designs: short-term depletion of tryptophan have found an adverse effect on mood in patients with h/o depression, mixed findings in worsening of panic disorder (*Van der Does AJW, 2001., Kent JM, 1996)

• A study found that tryptophan depletion increased depression, anxiety, and somatic scores in SSRI-recovered and medicated depressed patients, as compared with control condition (*Spillman MK, 2001)
Conclusion

• This patient's hx demonstrated a marked temporal correlation between the beginning and ending of Atkins diet with relapse and resolution of panic symptoms

• The prevalence of dieting in the population suggests the prudence of inquiring abt changes in diet when a previously stable anxiety disorder patient experiences a relapse
A case of the re-emergence of panic and anxiety symptoms after initiation of a high-protein, very low carbohydrate diet.

THANK YOU!
How the brain works.