20th Global Obesity Meeting
August 24-25, 2018 Singapore

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Atypical Anorexia (Luigi Cornaro Diet) as a Precaution against Diseases and a Sustainable Weight Management Strategy



YU Ligen
Research Support Office and Bibliometrics Analysis)
Nanyang Technological University

E-mail: mlgyu@ntu.edu.sg

24 August 2018

Disclaimers

- This presentation is based on my personal experience, and is intended as reference only, and does not serve as a medical advice.
- The information in this presentation is only to help you make informed decisions about your health. It is not intended as a substitute for any treatment that may have been prescribed by your doctor, who is familiar with your specific needs.
- If you doubt that you have a medical problem, I urge you to seek competent medical care.

Highlights

- At anytime, gut protection is the most important issue in weight loss and weight management.
- Luigi Cornaro and the Luigi Cornaro Diet
- Upregulated Autophagy (Anorexia) – the Mechanism behind Luigi Cornaro Diet
- One of the triggers of Upregulated Autophagy: Infection
- Upregulated Autophagy (Anorexia) in Comparison with Starvation
- Infection Induced Anorexia (IIA) in Comparison with (Starvation Induced) Gut Illness Triggered Anorexia
- Anorexia Nervosa (AN) as an Abuse of Upregulated Autophagy featured by **Food Phobia**
- Treatment of **Food Phobia** in AN – Luigi Cornaro Diet.
- Conclusion Remarks.

At anytime, gut protection is the most important issue in weight loss and weight management.

- There is a strong barrier between our stomach and our main body – the gut mucosa.
- Any nutrition from our main body cannot be transported to our stomach. Nutrition for our stomach solely relies on the food we eat.
- Short duration (< 18 hours) fasting is good for gut. Long duration (>24 hours) fasting will result in gut mucosa atrophy, which makes our main body prone to bacteria translocation from gut and leads to sepsis. **Fasting (>24h) is bad to gut!**

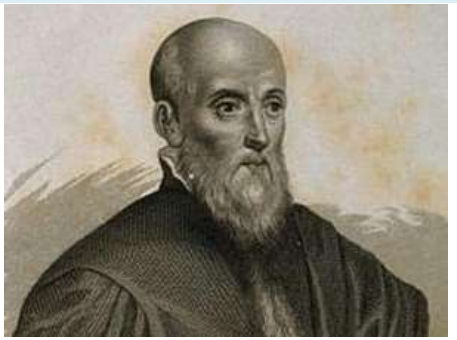


A person is healthy only when his stomach is in good condition.

Luigi Cornaro and The Luigi Cornaro Diet

Cornaro, Luigi was a Venetian nobleman.

- When he was about 40, Cornaro found himself exhausted.
- The condition was so bad, that "the best delivery he had to hope was death".
- On the advice of doctors, he began to adhere to a diet, restricting himself to only 12 oz of food daily.
- He recovered his health and lived up to the age of 102.



Cornaro, Luigi
(1464 – 1566)

The Luigi Cornaro Diet -- "Eat but Little"

– It is neither **Calorie Restriction** nor **Fasting**.

– **Luigi Cornaro Diet provides almost Zero Calories to the main body**

1. The nutrition eaten is only sufficient to maintain the homeostasis of the GIT mucosa.
2. It keeps a serum starvation in the main body to trigger the **Upregulated Autophagy**

Upregulated Autophagy as a Response to various Stresses

– the Biological Mechanism behind Luigi Cornaro Diet

- Autophagy is a highly regulated process in eukaryotes to maintain homeostasis and manage stress responses.

Molecular Cell Review DOI 10.1016/j.molcel.2010.09.023

Autophagy and the Integrated Stress Response

Guido Kroemer,[1,2,3,4,5,*] Guillermo Mariño,[1,2] and Beth Levine[6,7,8,*]

Autophagy is a tightly regulated pathway involving the lysosomal degradation of cytoplasmic organelles or cytosolic components. This pathway can be stimulated by multiple forms of cellular stress, including nutrient or growth factor deprivation, hypoxia, reactive oxygen species, DNA damage, protein aggregates, damaged organelles, or intracellular pathogens. Both specific, stimulus-dependent and more general, stimulus-independent signaling pathways are activated to coordinate different phases of autophagy. Autophagy can be integrated with other cellular stress responses through parallel stimulation of autophagy and other stress responses by specific stress stimuli, through dual regulation of autophagy and other stress responses by multifunctional stress signaling molecules, and/or through mutual control of autophagy and other stress responses. Thus, autophagy is a cell biological process that is a central component of the integrated stress response.

Multiple Physiological Functions of Upregulated Autophagy

Autophagy: degradation of intracellular components in lysosomes

- Cellular quality control
  - **Removal of altered or dysfunctional proteins and organelles.**
- Energetic balance maintenance
  - **Allows cells to reutilize their own constituents for energy. As the energy is from each cell in our body, it is more efficient than the energy from food.** The person will always feel energetic even when he eats very less.
- Pathogen cleaning
  - **An effective defence against extracellular insults and pathogens.**
  - **Resolution of an infection through direct pathogen killing.**
  - This why Luigi Cornaro could live an illness-free life for over 60 years after he adopted this diet.

One Trigger of Upregulated Autophagy -- Infection

- **Triggering upregulated autophagy (infection induced anorexia, IIA) helps pathogen elimination**

MICHAEL S. EXTON

Appetite, 1997, *29*, 369–383

Infection-Induced Anorexia: Active Host Defence Strategy

In association with fever production, decreased food consumption is the most common sign of infection. This effect is often regarded as an undesirable manifestation of sickness. However, evidence suggests that just as many behaviours have now been shown to modify immunocompetence, infection-induced anorexia is a behaviour systematically organised for pathogen elimination. That is, anorexia is an active defence mechanism that is beneficial for host defence. This review details the mechanism of infection-induced anorexia, placing it within the framework of the intricately organised acute phase response—the host response to infection. Furthermore, the evolutionary, behavioural, metabolic and immuno-

- **After resolution of infection, if one still keep the habit of eating less, his body can remain in the upregulated autophagy state.**

Comparison of Starvation to Upregulated Autophagy

Starvation (Calorie Restriction, Fasting)

(Passive Autophagy):

- Negative energy balance lead to hunger, grumpiness, irritability, shakiness, cognitive fuzziness, anxiety, and low mood.
- The Body is doing all effort to prevent weight loss

Upregulated Autophagy (Anorexia):

- Provides plenty of nutrition and energy right from each cell of our body;
- Negative energy balance actually confers a sense of calm and energetic.
- The Body is promoting weight loss.

Infection Induced Anorexia (IIA) in Comparison with (Starvation Induced) Gut Illness Triggered Anorexia

Infection Induced Anorexia (IIA)

- No side effects, transient in nature.

Anorexia Triggered by (Starvation Induced) Gut Illness (Like Gut Bleeding) →**(Anorexia Nervosa)**

- Imposes a much severe starvation state (anorexia) and triggers upregulated autophagy can resolve gut illness (like gut bleeding) effectively, but is not sustainable, as the nutrition from upregulated autophagy cannot reach gut mucosa, and dysfunction in gut persists.
- Powerful regulation of appetite. After anorexia, the body remembers the upregulated autophagy state, and can easily resume this state even without anorexia, i.e. loss of appetite.
- Repeated cycles of Gut Illness →Trigger Anorexia → Illness Cure → Non-Regular or Excessive Eating → Gut Illness
- **Food phobia** as a result of GIT mucosa atrophy and dysfunction

Anorexia Nervosa as an Abuse of Upregulated Autophagy

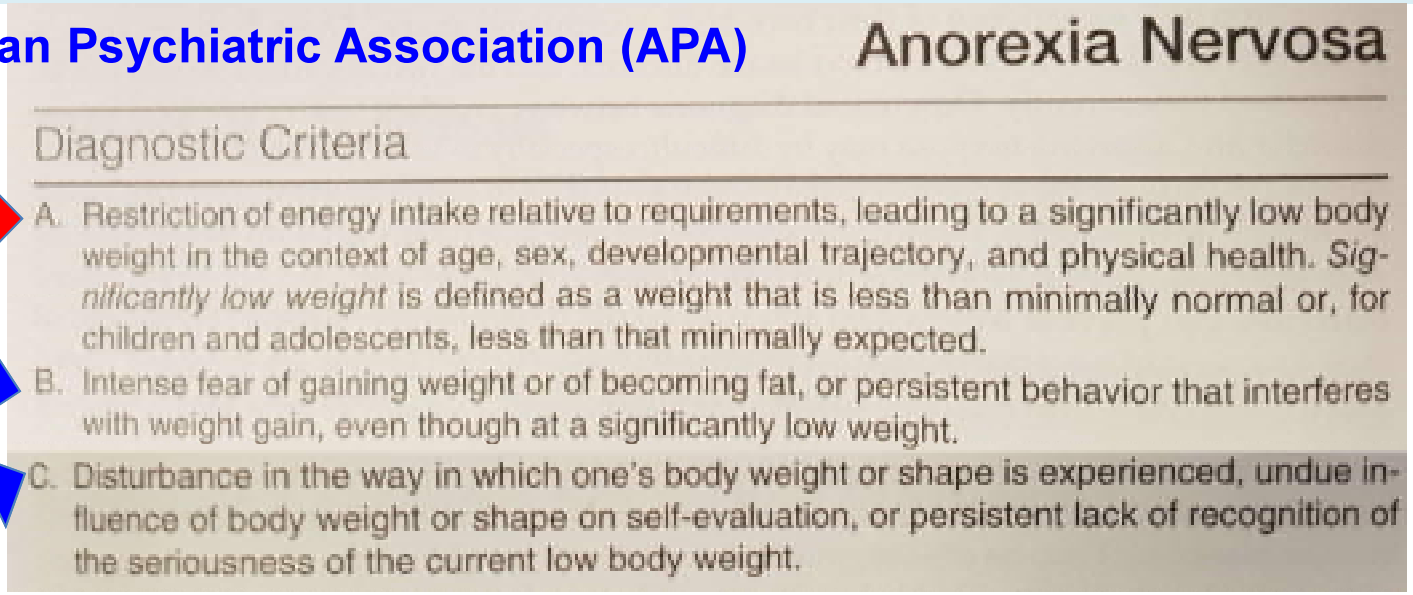
(AN patient only focus on the benefit, neglected the potential danger of abuse)

DSM-5 of the American Psychiatric Association (APA)

A) Food phobia;

B) weight gain phobia;

C) side effect of autophagy, which gives the patient the feeling of energetic and calm of mind).



Anorexia Nervosa

Diagnostic Criteria

A. Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. *Significantly low weight* is defined as a weight that is less than minimally normal or, for children and adolescents, less than that minimally expected.

B. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain, even though at a significantly low weight.

C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

*Reference: American Psychological Association (APA), editor. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: APA; 2013, PP:338-339.

Anorexia nervosa (AN) and atypical anorexia (AA) are the aftermath of anorexia. They are no longer anorexia (loss of appetite)

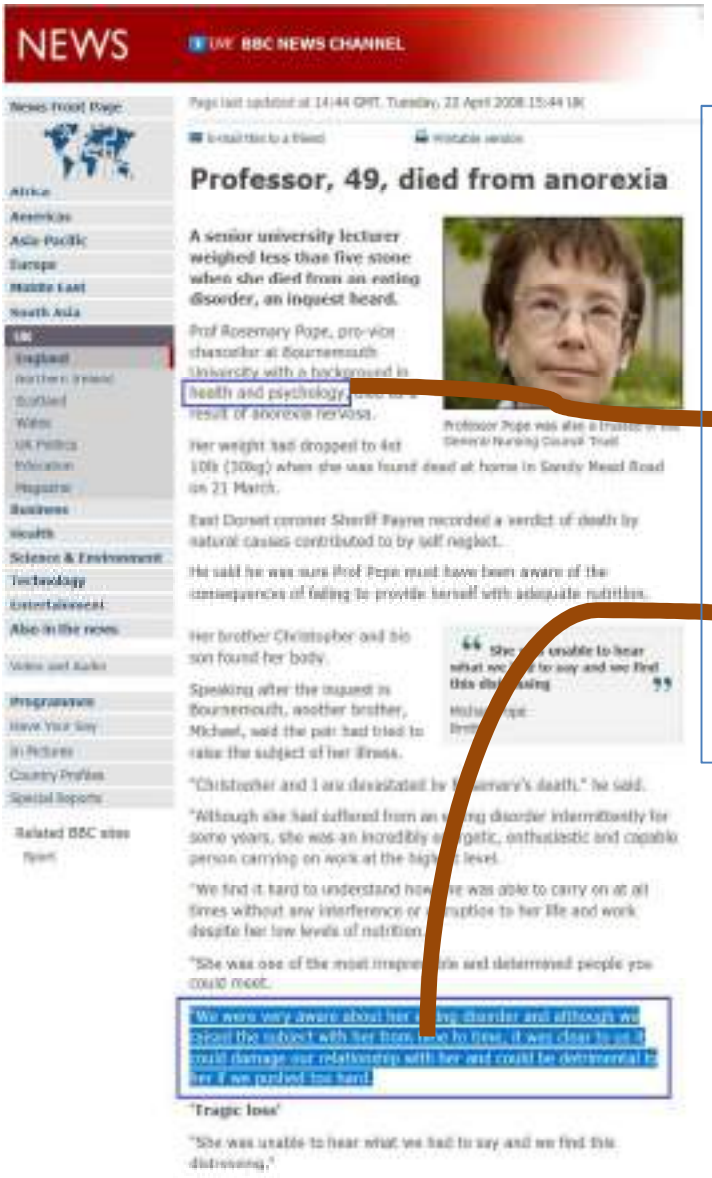
- AN is aftermath of anorexia triggered by starvation induced acute gut illness,
- AA is the aftermath of infection induced anorexia (IIA), or injury induced anorexia (IIA).

Food Phobia described by Luigi Cornaro
(!!! excesses in eating can be fatal !!!)

"On the contrary, I conclude, especially from the late trial I have had, that excesses in eating and drinking are often fatal. Four years ago, I consented to increase the quantity of my food by two ounces, …. This increase, had, in eight days' time, such an effect upon me, that, from being cheerful and brisk, I began to be peevish and melancholy, so that nothing could please me. On the twelfth day, I was attacked with a violent pain in my side, which lasted twenty-two hours and was followed by a fever, which continued thirty-five days without any respite, in so much that all looked upon me as a dead man."

A strong sign of dysfunction in the gastrointestinal tract (GIT).

When a patient doesn't know how much they should eat, he will often choose not to eat, or eat very less, leading to the excessive use of upregulated autophagy, and results in **Anorexia Nervosa**.


NEWS

BBC NEWS CHANNEL

Professor, 49, died from anorexia

A senior university lecturer weighed less than five stone when she died from an eating disorder, an inquest heard.

Prof Rosemary Pope, pro-vice chancellor at Bournemouth University with a background in health and psychology, [illegible] as a result of anorexia nervosa.

Her weight had dropped to 4st 10lb (100kg) when she was found dead at home in Sandy Mead Road on 21 March.

East Dorset coroner Sheriff Payne recorded a verdict of death by natural causes contributed to by self neglect.

He said he was sure Prof Pope must have been aware of the consequences of failing to provide herself with adequate nutrition.

Her brother Christopher and his son found her body.

"She was unable to hear what we had to say and we find this distressing."

Speaking after the inquest in Bournemouth, another brother, Michael, said the pair had tried to raise the subject of her illness.

"Christopher and I are devastated by Rosemary's death," he said.

"Although she had suffered from an eating disorder intermittently for some years, she was an incredibly energetic, enthusiastic and capable person carrying on work at the highest level.

"We find it hard to understand how she was able to carry on at all times without any interference or disruption to her life and work despite her low levels of nutrition.

"She was one of the most irrepressible and determined people you could meet.

"We were very aware about her eating disorder and although we raised the subject with her from time to time, it was clear to us it could damage our relationship with her and could be detrimental to her if we pushed too hard.

'Tragic loss'

"She was unable to hear what we had to say and we find this distressing."

Please note:

1. Prof Pope was an expert on health and psychology;
2. She valued her anorexia condition very much:

Prof Pope .... with a background in health and psychology,

AN is a physical problem, not mental

"We were very aware about her eating disorder and although we raised the subject with her from time to time, it was clear to us it could damage our relationship with her and could be detrimental to her if we pushed too hard.

There are virtues associated to AN

My wish:

After this talk, such tragedy will no longer happen,

1. Anorexic people can live healthily to a great longevity with the help of upregulated autophagy;
2. Obese people can also enjoy good health to a great longevity with the help of upregulated autophagy.

Patients can easily recover from AN by normal healthy eating, but the Egosyntonic Nature of AN preventing them from normal eating. Why?

Paper from: Eur. Eat. Disorders Rev. 20 (2012)

RESEARCH ARTICLE

Reluctance to Recover in Anorexia Nervosa

Ragnfrid H. S. Nordbø[1]*, Ester M. S. Espeset[1], Kjersti S. Gulliksen[1], Finn Skårderud[2,3], Josie Geller[4] & A

[1]Norwegian Institute of Public Health, Division of Mental Health, Oslo, Norway
[2]Lillehammer University College, Lillehammer, Norway
[3]Oslo University Hospital, Oslo, Norway
[4]St. Paul's Hospital, University of British Columbia, Vancouver, Canada
[5]Modum Bad Research Institute, Vikersund, Norway
[6]University of Oslo, Oslo, Norway

Abstract

Objective. Reluctance to recover may explain poor treatment outcome and high dropout and relapse rates in nervosa (AN). This study systematically explored what AN patients describe as interfering with their wish

frontiers in Psychology

REVIEW

The Egosyntonic Nature of Anorexia: An Impediment to Recovery in Anorexia Nervosa Treatment

Eva C. Gregertsen, William Mandy and Lucy Serpell*

Department of Clinical, Educational and Health Psychology, University College London, London, United Kingdom

A serious problem faced by clinicians treating anorexia nervosa is the egosyntonic nature of the illness, wherein individuals with anorexia nervosa value their disorder, thereby hindering motivation for recovery and engagement with treatment. The objective of this

http://dx.doi.org/10.1016/B978-0-12-410473-0.00005-2

CHAPTER FIVE *Vitamins and Hormones*, Volume 92

Steroid Metabolism and Excretion in Anorexia Nervosa

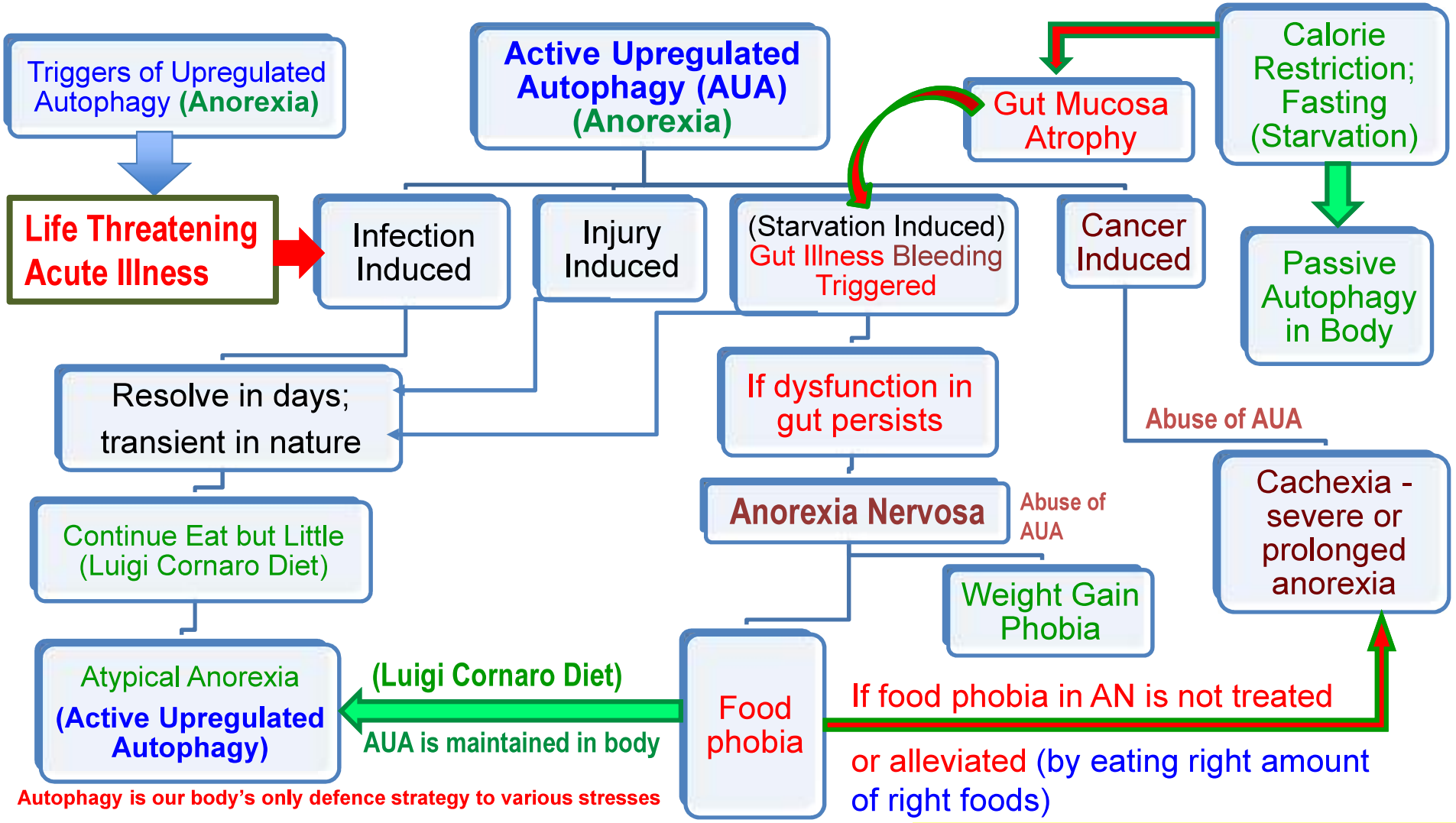
Denial is a prominent feature of AN, and patients resist evaluation and treatment. In the "restricting" form of AN, patients lose weight by self-induced starvation. Compulsive exercising increases caloric debt even further. Most of the medical conditions associated with AN are found in uncomplicated starvation and are reversed by a return to normal healthy diet and weight, but there are important differences between AN and simple starvation in those elements of diet that are deficient. In AN, protein intake

- The virtues of Upregulated Autophagy contribute to the Egosyntonic Nature of Anorexia Nervosa;
- The Food Phobia enhances excessive application of Upregulated Autophagy.

Alleviation of Food Phobia -- Luigi Cornaro Diet

- "Eat but Little" can resolve starvation induced GIT mucosa atrophy, restore the GIT mucosal homeostasis and integrity. (Eat like a new born baby, who starts eating after nine months without food in gut). AN patients can recover their GIT health in few months.
- Luigi Cornaro diet also helps remain a serum starvation in the body, so that upregulated autophagy is running most of the time to keep the body of patient in good health.

Active Upregulated Autophagy (Anorexia): an Active Host Defence Strategy



Conclusion Remarks

- gut protection is the most important issue in weight loss and weight maintenance.
- Anorexia is not an illness, it is an active host defence to acute illness. By triggering the upregulated autophagy, it helps health recovery and maintenance,
- Anorexia nervosa (AN) is the aftermath of anorexia, featured by dysfunction in gut and food phobia
- if the dysfunction and the acute gut illness (like gut bleeding) persist, AN will not be relived, leading to cachexia,
- AN can be cured by Luigi Cornaro diet (Eat but Little), and turned to Atypical Anorexia (Anorexia with normal weight).
- Atypical Anorexia is an ideal health and weight management strategy, as the upregulated autophagy can protect the host from most of the common diseases.

"I likewise did all that lay in my power, to avoid those evils, which we do not find it so easy to remove: melancholy, hatred, and other violent passions, which appear to have the greatest influence on our bodies." ---- By Luigi Cornaro

For our own health, we should live with love, happiness, never feel sorry for ourselves, and be grateful to everyone we meet in our life.



A Calm and Peaceful Mind
Live with Gratitude, Love and Happiness

Thank you!

Time for Questions

References:

1. Exton MS. Infection-induced anorexia: Active host defence strategy. APPETITE 1997; 29:369-383. DOI: 10.1006/appe.1997.0116.
2. Luigi Cornaro Online writings on the Temperate life. http://soilandhealth.org/wp-content/uploads/02/0201hyglibcat/020105cornaro.html.
3. Zhi XY, Feng WZ, Rong YG, Liu R. Anatomy of autophagy: from the beginning to the end. Cellular and Molecular Life Sciences 2018; 75(5):815-831. DOI: 10.1007/s00018-017-2657-z.
4. Singh R, Cuervo AM. Autophagy in the cellular energetic balance. Cell Metabolism 2011; 13: 495-504. DOI: 10.1016/j.cmet.2011.04.004.
5. Gregertsen, Eva C.; Mandy, William; Serpell, Lucy: The Egosyntonic Nature of Anorexia: An Impediment to Recovery in Anorexia Nervosa Treatment. FRONTIERS IN PSYCHOLOGY Volume: 8 Article Number: 2273 Published: DEC 22 2017. DOI: 10.3389/fpsyg.2017.02273.
6. Wassif Samuel Wassif, Andrew Rashad Ross: Steroid Metabolism and Excretion in Anorexia Nervosa.