Regurgitation, Rumination and the Rumination Syndromes

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Regurgitation is defined as the return of previously swallowed food or secretions into the mouth. Regurgitation does not involve the coordinated central, autonomic and somatic nervous system reflexes involved in nausea, retching and vomiting. It can be involuntary, as with infants who "spit-up" after feedings or patients with gastroesophageal reflux due to an incompetent lower esophageal sphincter mechanism, or it can be voluntary, as with bulimarexic patients. In contrast to the involuntary regurgitation of GERD, voluntary regurgitations do not occur during sleep.

Rumination is defined as "a condition characterized by repetitive, effortless regurgitation of recently ingested food into the mouth followed by rechewing and reswallowing or expulsion."[1, 2] Rumination is a special kind of voluntary regurgitation - special in the sense that it is a habit *with the purpose of self-stimulation.* Such activities are exacerbated by states of boredom, excitement or anxiety. As such, rumination is akin to gum-chewing, head-rolling, smoking or nail-biting – activities generally done for no purpose other than sensory self-stimulation. By contrast, the voluntary regurgitation of bulimarexic patients is not done for self-stimulation, but to avoid gaining weight.[10]

An episode of rumination is said to cease when the regurgitant becomes acidic, usually 1 to 2 hours after the end of a meal. However, not all ruminators regurgitate recently ingested food; rumination doesn't cease in all cases when the regurgitant becomes acidic. Some may ruminate for the majority of the time they are awake. The literature contains conflicting statements as to the seriousness of rumination. It has been called a benign disorder requiring little more than reassurance of its harmlessness.[4] By contrast, a report of 38 adult and adolescent ruminators included 16 who had lost an average of 29 pounds, with a range of 6 to 150 pounds.[5]

Therefore, patients who voluntarily regurgitate and are diagnosed with rumination do not constitute a coherent population.[6] Rumination exists in a wide range of ages, from infancy to adulthood, and is a broad spectrum of conditions ranging from short, benign and self-limited to severe and life threatening.[7] *The heterogeneity of patients in many reviews of large cohorts of ruminators contributes to uncertainty of diagnosis and management*. Although retrospective chart surveys can have great value, what's needed, in my opinion, is more analytic "splitting" of case studies in addition to abstract "lumping" of large populations.[8]

What makes rumination either benign or dangerous? 1) Large, uncompensated losses of nutrients from the mouth to the outside can cause weight loss even to the extent of inanition and death.[9] 2) Rumination that persists beyond the time the regurgitant becomes acidic can result in severe esophagitis and profound anemia.

True rumination presents as three sub-syndromes: Infant Rumination Syndrome , Rumination in neurologically damaged, socially impaired individuals, and classic Benign Rumination.

Infant rumination syndrome (IRS) begins as early as 2 to 3 months of age when infants begin to acquire the ability for self-stimulation (Stages 2 to 3 of Piaget's Sensorimotor Period of development[10]). It is caused by a poverty of interaction between mother and infant.[11] The infant's needs and cues are not adequately appreciated or responded to by the caregiver. If there is insufficient reciprocal interaction between infant and mother, the infant may learn to stimulate and "feed" itself by ruminating. Rumination begins when the infant senses that it is totally alone and it stops the moment it senses the presence of another person. Therefore, observing or photographing a ruminating infant requires stealth.[12] Whether or not rumination ceases when the regurgitant becomes acidic and no longer tastes like food is not known. However, the seriousness of IRS is related to the infants' inability to contain all that they bring up into their mouths; much is lost and, ultimately, death from inanition may occur. The most humane and effective management of IRS amounts to supplyimg the infant with what it needs: social contact and reciprocal, sensitive, need-gratifying nurturing. This has been called "holding therapy" during which a surrogate mother holds and comfortably interacts with the infant several hours a day. Catch-up weight gain may commence and the frequency of rumination decreases within a few days of the start of ongoing holding therapy.[13, 14]

Rumination in neurologically damaged, socially impaired individuals: Patients are prone to self-stimulating behaviors if their ability to engage socially is limited and their appearance and behavior make others reluctant to interact with them.[15] In contrast to neurologically normal infants whose rumination ceases the moment they perceive the possible presence of another person, developmentally impaired ruminators seem to have adapted to social isolation and may continue ruminating oblivious to the presence of others. In contrast to benign ruminators, their rumination is quite driven and does not necessarily cease when the regurgitant no longer tastes like food. Developmentally impaired ruminators may develop severe peptic esophagitis and anemia. Management includes administration of proton pump inhibitors, sucralfate suspension and ferrous sulfate. If the patient retains the potential for social interaction, the rumination may be cured by a devoted caregiver willing to interact with the patient long enough to allow for the development of an emotional attachment. And, similar to infant ruminators, when social isolation is replaced by a satisfying inter-personal relationship, the need for self-stimulation is replaced by the enjoyment of social stimulation. Ideally, no developmentally impaired ruminator should be started on jejunal tube feedings, on the presumption that he or she is incapable of a social interaction, without the benefit of a trial of treatment analogous to "holding therapy."

Benign Rumination ("merycism"): This is the classic, best known rumination syndrome. It is a learned, self-stimulatory, pleasurable habit practiced by neurologically normal adults and children who typically suffer no serious complications or co-morbidities , although many benign ruminators are anxiety-prone or have obsessional traits.[4] While most benign ruminators (including historically important individuals such as Samuel Johnson[6] and Eduard Brown-Sequard[9]) practiced the habit in private, a few ruminators exhibited their regurgitative skills for the entertainment of audiences.[9]

Typically, rumination begins minutes after the end of a meal and continues for an hour or two, until the regurgitant no longer tastes like food. Adults with benign rumination are attached to their habit; they usually don't discuss it or seek medical attention for it. They may, however, consult with complaints of halitosis or heartburn. Parents of children with benign rumination bring their child to the pediatric gastroenterologist because of their concern that the behavior may be related to organic disease. Management of benign rumination must aim at avoidance of stressful, invasive diagnostic

studies and effective reassurance that the ruminative behavior is non-pathogenic and likely to subside spontaneously in time, especially in pediatric patients, if it ceases to be a cause of obvious parental concern. If the benign ruminator is an adult, management consists of whatever behavioral or psychological treatments the patient is willing to pursue.[17]

The Three Rumination Syndromes

Type	*Typical age at onset*	*Predisposing Factors*	*Ceases when food taste is gone*	*Complications*	*Management*
I.R.S.	Infants > 2 mo	Failure of attachment	Probably?	Inanition & death	"Holding Therapy"
Socially Handi-Capped D. D.	Childhood	Impaired Social inter-Action	No	Severe Esophagitis Anemia	PPI Sucralfate Consistent nurturing ? J-tube
Benign	Childhood & Adulthood	O-C traits	Yes	Halitosis Heartburn	Behavioral Therapy if pt is motivated

The purpose of this classification of rumination and the distinction of it from other kinds of self-induced regurgitation is to aid clinicians in their diagnosis of "what the patient has". When that knowledge is integrated with "how it came to be" by uncovering the life experiences and thoughts that produced it, then management becomes more discerning and outcomes improve. Infant ruminators won't receive fundoplications for "G-E reflux," and regurgitating bulimarexics won't be diagnosed as benign ruminators[16] (unless, of course, they regurgitate as a pleasurable, self-stimulating habit in addition to regurgitating and spitting for the purpose of losing weight).

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