

MEDICAL GRAND ROUNDS

Parkland Memorial Hospital
December 16, 1965

Dysphagia of Esophageal Origin

CASE #1: A Classical Case of Symptomatic Tertiary Contractions

The patient is a 46-year-old white male who was first seen by the GI Service because of recurrent chest pain and dysphagia. The patient's health has generally been good, but approximately 11 years ago he began to have episodes of chest pain. For the most part these attacks occurred at night either just after he went to bed or they would awaken him from a sound sleep. He would develop moderately severe chest pain of a "squeezing" or "constricting" nature retrosternally. There was no radiation of the discomfort into his neck, arms, back, or shoulders and there was no associated heartburn or regurgitation of gastric contents. At first these episodes were infrequent, but gradually they increased in frequency, occurring almost nightly. He would obtain relief by walking about for 10 to 15 minutes.

During the first 7 years of this patient's illness he experienced no difficulty in swallowing, but for the last 3 years dysphagia became an increasingly severe problem. Initially he had the greatest difficulty with liquids; swallowing either hot or cold drinks would trigger episodes of severe chest pain and the fluid would commonly regurgitate into his mouth. More recently he has had dysphagia toward solids; however, fluids still give him the greatest difficulty. Attacks are episodic and irregular in severity; at times he can swallow both liquids and solids normally. Pain is invariably associated with attacks of dysphagia. Emotional stress and fatigue seem definitely to enhance the frequency of attacks.

X-ray examination has repeatedly shown tertiary contractions of the esophagus and esophagoscopy is negative. Therapy with a variety of drugs has not been helpful, but repeated esophageal dilatations (as often as every 2 weeks) have brought a moderate degree of relief.

CASE #2: Symptomatic Tertiary Contractions Misdiagnosed as Coronary Insufficiency Syndrome

The patient was a 41-year-old white male seen because of recurrent attacks of substernal discomfort. The patient stated that he had been in generally excellent health until approximately a year and a half before, when he first noted attacks of substernal discomfort. These attacks typically came on late in the evening, and on only one occasion were associated with exertion. Each attack would last for no longer than 10 to 15 seconds, was associated with a "tight" or "constricting" sensation in the chest with radiation to the left shoulder and left arm and would disappear spontaneously. X-ray examination of the thorax, esophagus, and stomach revealed no abnormality and electrocardiograms showed no diagnostic changes.

Because of continued attacks of discomfort, further work-up eventually revealed esophageal pressure studies typical of diffuse spasm and it could be shown that the attacks of pain coincided with these periods of abnormal esophageal motility. At no time in this patient's history did he have dysphagia.

CASE #3: A Patient With a Lower Esophageal Ring Misdiagnosed as a Hiatus Hernia

The patient is a 61-year-old white male who was in generally excellent health until approximately 3 years prior to being seen by the GI Service. At that time he described an attack of dysphagia which occurred while he was eating meat and which was associated with a "sticking" sensation in his lower mid-chest. He retched repeatedly and was finally able to bring up the offending piece of meat. During the ensuing two years he had several similar episodes which were always brought on by eating a rubbery solid food such as meat. He never had dysphagia toward liquids.

Because of these symptoms he was diagnosed as having a hiatus hernia and surgery was recommended. It should be emphasized that he never had signs or symptoms of esophageal regurgitation, i.e., heartburn or esophageal reflux. Immediately following repair of his hiatus hernia, he noted that he had the same symptoms still. On repeat examination some months later a lower esophageal ring was demonstrated; under the fluoroscope a solid bolus could be shown to clearly become impacted in the narrowed ring structure. There was no evidence of gastroesophageal reflux in this patient despite repeated attempts to produce reflux of gastric contents into the esophagus under fluoroscopy. The patient has done well with no therapy by simply carefully chewing his food.

CASE #4: A Case of Lower Esophageal Ring Diagnosed as an Emotional Problem

The patient is a 47-year-old white female seen because of a history of intermittent dysphagia. The patient's history goes back approximately 3 years, when she began to experience episodic dysphagia characterized by a sensation of sticking of food in the chest which seemed to be related to periods of emotional stress. These attacks of dysphagia characteristically occurred only toward solid foods, and in particular meat. She never experienced these symptoms when swallowing liquids. In between attacks she was free of all symptoms.

7. She had been examined innumerable times and upper gastrointestinal films were said to be negative. The intermittency of the symptoms suggested a lower esophageal ring, and examination of the lower esophagus with particular attention to the possibility of this lesion revealed a classical lower esophageal ring the lumen of which was approximately 12 mm. across. The patient was treated with pneumatic bag dilatation and has had no further difficulty.

8. Ingelfinger, F. J.: Esophageal motility. *Physiol. Rev.* 34:433, 1954.

This superb, up-to-date review covers in considerable detail the various aspects of esophageal innervation and motility both in the normal patient as well as in various disease states. An attempt is made to correlate function, motility records, and anatomic structure of the esophagus.

9. Atkinson, M., P. J. Rogers, S. M. Wykes, and F. J. Ingelfinger: Swallowing. I. Normal pharyngeal mechanisms. *J. Clin. Invest.* 34:100, 1955.

This publication describes the normal pharyngeal mechanism of swallowing. A detailed analysis is given of the function of the pharynx, hypopharynx, and superior esophageal sphincter.

References

I. General Reviews

1. Ingelfinger, F. J.: Disorders of esophageal motor functions. Adv. Int. Med. 8:11, 1956.

This publication is probably the most up-to-date and concise review of the normal swallowing mechanisms, cardiospasm, diffuse spasm, lower esophageal ring, and peptic esophagitis.

2. Osborne, G., P. T. Savage and S. L. Strange: One hundred consecutive cases of dysphagia: Some problems in diagnosis. Clin. Radiology 11:250, 1960.

This publication reviews the causes of dysphagia in 100 consecutive cases. It is notable in that the authors fail to diagnose lower esophageal ring and diffuse spasm in any case despite the fact that several of their case reports strongly suggested one of these two lesions.

3. Schatzki, R.: Esophagus: Progress and problems. Am. J. Roentgenol. 94:523, 1965.

A particularly good review with respect to the controversial points concerning lower esophageal ring and diffuse spasm of the esophagus.

4. Ingelfinger, F. J., P. Kramer, L. Soutter and R. Schatzki: Panel discussion on diseases of the esophagus. Am. J. Gastro. 31:117, 1959.

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6. Hightower, N. C.: Esophageal motility in health and disease. Dis. of the Chest 28:150, 1955.

7. Ingelfinger, F. J.: Swallowing disorders in clinical practice. Med. Sci., p. 451, April 10, 1960.

II. Esophageal Anatomy and Physiology

8. Ingelfinger, F. J.: Esophageal motility. Physiol. Rev. 38:533, 1958.

This superb, up-to-date review covers in considerable detail all of the various aspects of esophageal innervation and motility both in the intact, normal patient as well as in various disease states. An attempt is made to correlate function, motility records, and anatomic structures of the esophagus.

9. Atkinson, M., P. Kramer, S. M. Wyman, and F. J. Ingelfinger: Dynamics of swallowing. I. Normal pharyngeal mechanisms. J. Clin. Invest. 36:581, 1957.

This publication describes the normal pharyngeal mechanisms which initiate swallowing. A detailed analysis is given of the pressure phenomena found in the pharynx, hypopharynx, and superior esophageal sphincter.

10. Fleshler, B., T. R. Hendrix, P. Kramer, and F. J. Ingelfinger: The characteristics and similarity of primary and secondary peristalsis in the esophagus. *J. Clin. Invest.* 38:110, 1959.
This publication describes in detail the characteristics of normal primary and secondary peristalsis in the esophagus.
11. Kramer, P., M. Atkinson, S. M. Wyman, and F. J. Ingelfinger: The dynamics of swallowing. II. Neuromuscular dysphagia of the pharynx. *J. Clin. Invest.* 36: 589, 1957.
An analysis of 7 patients with poliomyelitis, myasthenia gravis, and dystrophica myotonica with respect to disorders of swallowing.
12. Fleshler, B., T. R. Hendrix, P. Kramer, and F. J. Ingelfinger: Resistance and reflex function of the lower esophageal sphincter. *J. Appl. Physiol.* 12: 339, 1958.
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19. Donald, D. E.: Esophageal dysfunction in the rat after vagotomy. *Surgery* 31: 251, 1952.
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In this study silver clips were placed, through an esophagoscope, at the junction of the esophageal and gastric mucosa. Movement of these clips with reference to the diaphragm was then studied in a variety of different experimental situations. This author concluded that "under physiologic conditions, the mucosa of the esophagogastric junction region appears to be mobile over

the underlying tissues, and to be capable of considerable automatic migration....."

21. Van Trappen, G., E. C. Texter, C. J. Barborka, and J. Vandenbroucke: The closing mechanism of the gastroesophageal junction. *Am. J. Med.* 28:564, 1960.

This is an excellent review of the mechanisms which account for the lower esophageal barrier. Included are discussions of 1) the anatomic sphincter, 2) the flap valve mechanism, 3) the diaphragmatic pinchcock, 4) the cardiac rosette, and 5) the physiologic sphincter.

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III. Tertiary Contractions and Cardiospasm of the Esophagus

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This is probably the first description of the symptoms associated with tertiary contractions of the esophagus. Six cases are described in which the patients experienced dysphagia, particularly toward liquids, substernal pain, and a sensation of impending suffocation.

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IV. Lower Esophageal Ring

37. Ingelfinger, F. J., and P. Kramer: Dysphagia produced by a contractile ring in the lower esophagus. *Gastroenterology* 23:419, 1953.

This report describes 6 patients, all males, who developed sudden, intermittent dysphagia which was attributed to the presence of a lower esophageal ring. This is the first such case report in the literature.
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