An Uncontrolled Comparison of Treatments For Achalasia

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A series of 78 patients with achalasia, seen during a 10-year period, was like those reported by others with regard to age at onset, nature of symptoms, and duration of symptoms. Analysis of the results of 5 different treatment modalities administered allows an uncontrolled comparison heretofore not available from an institution at which no one treatment was favored over all others. Those who were not treated or who received only anticholinergic medication did not become asymptomatic. Those treated by single or repeated bougienage were not improved for more than a few weeks and suffered a 6% incidence of esophageal perforation. Forty-six per cent of those treated by a single pneumatic dilatation were asymptomatic for 1 year or more. Although esophagocardiomyotomy provided symptomatic relief for 1 year or more in 85%, there was a 25% incidence of gastroesophageal reflux.

NO STUDY of the treatments for achalasia with randomization of patients among treatments has appeared, nor is this such a study. At this hospital, however, patients with achalasia may come to any of four different clinical units, each of which tends to arrive independently at diagnostic and therapeutic decisions, so that 5 different methods of management have been used. These may be considered to have been randomly applied, insofar as the physician and unit involved are determined by referral patterns or other factors probably unrelated to the severity, duration or any other aspect of the disorder.

In this review of 10 years' experience at this hospital, three patients went untreated, 7 were initially treated by medication only, 32 were dilated with mercury-filled bougies, 48 were dilated by pneumatic dilatation, and 24 had esophagocardiomyotomy. Study of this series allows comparison of the relative incidences of symptomatic relief and therapeutic complications among these methods.

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Methods and Materials

We reviewed the charts of all patients with achalasia seen at the University of Iowa Hospitals during the decade from January, 1963 through December, 1972. A radiographic study showing esophageal dilatation and disordered peristalsis proximal to a smoothly tapering, narrowed terminal esophageal segment was accepted as evidence of achalasia. Although not required, esophagoscopy was usually performed to eliminate a benign stricture or malignant obstruction at the cardia as a cause of the radiographic abnormality. The history of a vagotomy before the onset of symptoms was cause for exclusion from this study to eliminate those rare cases of "postvagotomy achalasia." For comparison with groups studied by others, the sex of the patients, the age at the time of onset, the type of symptoms, and the duration of symptoms before diagnosis were noted. In each patient, the sequence of treatment modalities and the response to therapy were recorded. From the information available patients were classified symptomatically as asymptomatic, improved, or unimproved for each treatment they were given. For a treatment regimen to be defined as successful, we required an asymptomatic interval of at least one year following its initiation. Because some patients were lost to followup, we sent detailed questionnaires to all patients for information regarding current symptomatic status. Sixty per cent of these questionnaires were answered and this information was used for the classification of response to the last treatment given.

Patient Data

Demographic Data. Seventy-eight patients met the criteria for inclusion in this review. Forty-three (55%)

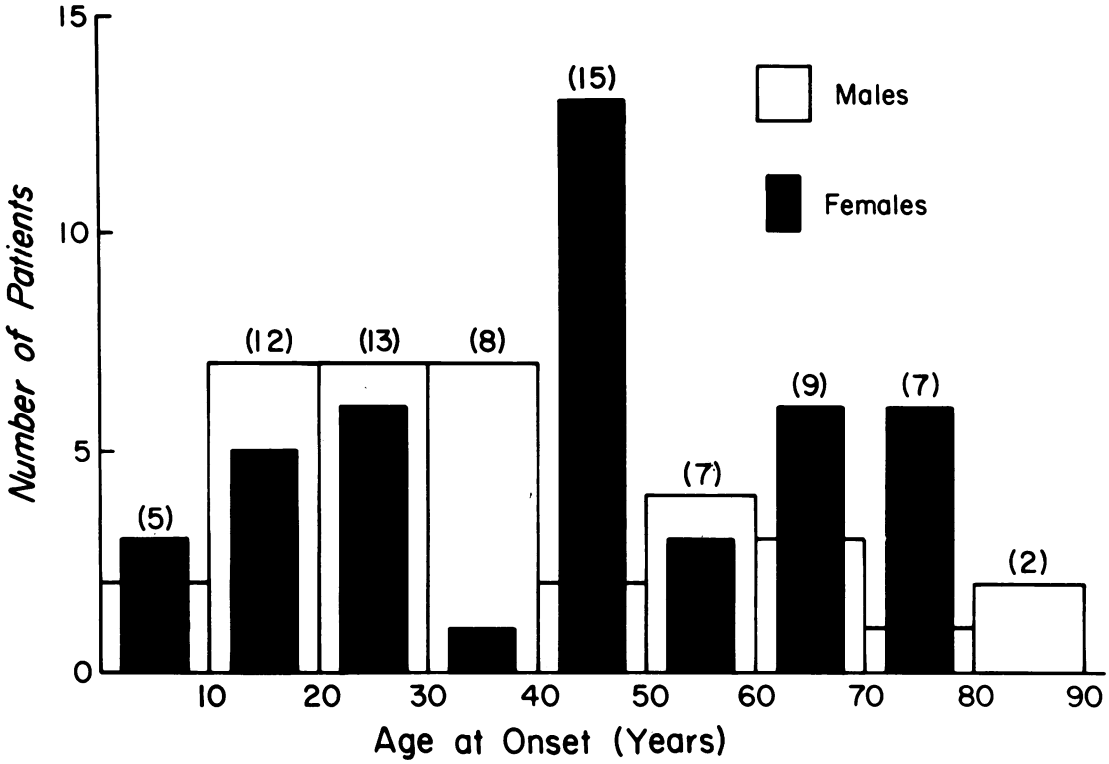

FIG. 1. The ages at onset of symptoms of achalasia in 78 patients is nearly uniformly distributed. Nearly two-thirds of the males, however, had the onset of symptoms before age 40 while a similar ratio of females experienced the first symptoms after that age.

were female (a sex preponderance which has been noted by others).[5,7,11] The ages at onset of symptoms were nearly uniformly distributed and ranged from 15 months to 82 years. Nearly half the patients experienced symptoms before age 40 (Fig. 1). Almost two-thirds of the males had the onset of symptoms before age 40, while a similar proportion of females became symptomatic after that age.

Symptoms and Signs. Sixty-four patients (82%) complained of dysphagia, usually most notable with solid food and usually described as a sense of food "hanging-up" in the lower retrosternal region (Fig. 2). A few localized the dysphagia to the neck, upper retrosternal region, or epigastrium. Dysphagia was as often associated with hot food as with cold food. Regurgitation was reported by 60 patients (77%). Weight loss of greater than 10 pounds (4.5 kg) was mentioned by 37 patients (47%). Symptoms of aspiration (e.g. choking or coughing spells) or a history of pneumonia or lung abscess was recorded for 31 patients (41%). Twenty-one patients (28%) experienced neck, chest, shoulder, back, or epigastric pain, not always associated with swallowing. One patient reported an episode of hematemesis, melena, and syncope. This was not attributable to any other disease process.

Forty-four per cent had symptoms for 1 year or less before the diagnosis was established, but nearly one-fourth had endured symptoms for 10 years or longer (Table 1).

Sixty-eight patients had esophagoscopy and 27 had esophageal manometry to confirm the diagnosis. Endoscopic study revealed little or no distal esophageal mucosal erythema in all but two cases. One of these two patients had a 40-year history of symptoms and a previous cardioplasty; an ulcerated carcinoma was found in the mid-esophagus. The second patient had a small

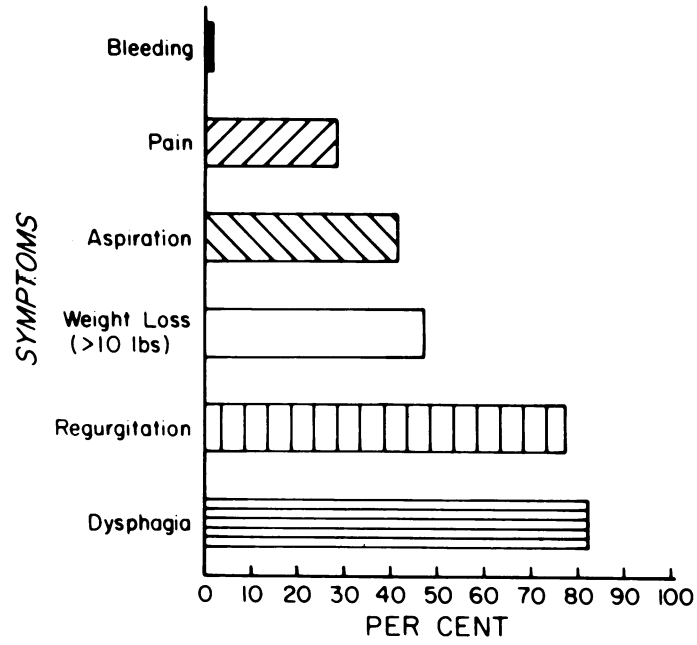

FIG. 2. The percentage of 78 patients who presented with various symptoms of achalasia is shown. Over half complained of both regurgitation and dysphagia.

TABLE 1. *Duration of Symptoms at Time of Diagnosis in 78 Patients With Achalasia*

Duration of Symptoms (Years)	Per Cent of 78 Patients
0-1	44
1-4	21
4-7	6
7-10	6
>10	23

mucosal ulceration in the distal esophagus. It was benign, and it healed after sedative and anticholinergic treatment.

In the 27 patients who underwent esophageal manometry by the infusion method, the manometric patterns were similar to those reported by others.[3,4,8]

Results

Three of the 78 patients reviewed were not treated (Table 2). One died from thyroid cancer a month after admission, and the other two did not return for treatment. Judging by his response to the questionnaire, one of these has remained symptomatic. The other remains lost to followup. Thus, no spontaneous remissions were detected.

Six of the 7 patients who were treated with anticholinergics (and occasionally with a tranquilizer) failed to improve. The one who improved became asymptomatic for 1 year and then was lost to followup. The other 6 patients in this group required further treatment (Table 2). Thus, one of 7 (14%) was successfully treated with medication alone.

There were 23 patients treated in the hospital by dilatation with mercury-filled bougies (usually to a 60 French), at least 7 of whom underwent two courses. Those patients who had such dilatation only to facilitate passage of the pneumatic dilator are not included in this analysis. Of these 23 patients, 9 were lost to followup and 14 experienced some relief of symptoms but in no case for longer than 4 months (Table 2). Two patients suffered perforation of the esophagus, and both recovered with conservative treatment. Ten of the patients in this study were instructed in periodic self-dilatation by the mercury-filled bougies. One of these 10 patients was treated unsuccessfully by bougienage in the hospital previously. Three such patients were not seen again. The other 7 experienced improvement in their symptoms for a few days to a few weeks following each dilatation. Considering both home and hospital-administered bougienage, no patient was successfully treated in this way. All patients who have been followed have required repeated dilatations or the use of a different mode of therapy to alleviate symptoms. The incidence of esophageal perforation in this combined group of 32 patients was approximately 6%.

Forty-eight patients were treated with pneumatic bag dilatation. The pneumatic bag was usually inflated to a pressure of 10 to 13 pounds per square inch for two minutes while observing its configuration and location under fluoroscopy. Four patients were lost to followup soon after dilatation and another patient died a month later of breast cancer. Nineteen became asymptomatic for a year or more following the initial dilatation (Table 2). Thus, this treatment was successful in 19 (46%) of the

TABLE 2. *Results of Treatment in 78 Patients with Achalasia*

Treatment	Number Treated	Per Cent (Number of Patients) Successfully Treated*	Number of Late Failures†	Complications (Number of Patients)
No treatment	3	0	-	-
Anti-cholinergic medication	7	14% (1)	-	-
Dilatation by mercury-filled bougie	32	0	-	Esophageal perforation (2)
First dilatation by pneumatic bag	48	46% (19)	2	Aspiration pneumonia (2) Reflux esophagitis (3)
Second dilatation by pneumatic bag	9	38% (3)	3	-
Esophago-cardio-myotomy	24	85% (17)	2	Reflux esophagitis (5) Pneumonia (2) Empyema (1)

*Success is defined as an asymptomatic period of at least 1 year following institution of a method of treatment. Per cent success is therefore based on those patients who were followed for at least 1 year.

†A late failure is defined as the recurrence of symptoms after an asymptomatic period of 1 year or more.

41 patients who were followed a year or more after the first dilatation. Two of these 19 subsequently developed a recurrence of symptoms two and a half and 4 years after their initial dilatation. This leaves 41% who were asymptomatic at the last followup, ranging from 1 year to 44 years. Eleven other patients became asymptomatic after pneumatic dilatation but did not return for yearly followup (2 patients) or developed recurrent symptoms within a year (9 patients). Six of the 48 experienced some improvement after a pneumatic bag dilatation but 9 were unchanged. Neither sex, duration of symptoms nor age seemed to influence the results of treatment.

No patient developed esophageal perforation after pneumatic dilatation, but aspiration pneumonia occurred in two immediately after treatment. Three patients developed radiographic or endoscopic evidence of gastroesophageal reflux 3 months to 6 years after dilatation. Thus, approximately 7% of the 41 patients who were followed developed gastroesophageal reflux.

Nine of this group, only two of whom had become asymptomatic for a year or more after the first pneumatic dilatation, had a second trial of pneumatic dilatation. One of the 9 was lost to followup. Of the remaining 8 patients, 3 were not improved, 2 were moderately improved, and 3 were asymptomatic following this treatment. The 3 who became asymptomatic remained so for approximately one and a half years, a success rate of about 38%. All, however, became symptomatic after one and a half years, so the success rate to the time of last followup is zero. No complications from therapy occurred in this group.

The esophagocardiomyotomy as performed at this institution consisted of a single longitudinal incision along the esophagus extending from the inferior pulmonary vein (in most instances) through the region of the lower esophageal sphincter and onto the stomach for a distance ranging from a few millimeters to 6 centimeters. A thoracic approach was used approximately twice as often as an abdominal one. An attempt was made in every myotomy to strip the mucosa from the underlying muscle over half the circumference of the esophagus. The numbers of patients who had a short or a long extension of the incision onto the stomach are too small to make any generalizations regarding later development of gastroesophageal reflux.

Twenty-four patients were treated by esophagocardiomyotomy, 11 of whom had had at least one previous pneumatic dilatation. One patient was not seen again. Three became asymptomatic after the operation but did not return for a year or more. Of the 20 patients followed a year or more after operation, 17 were asymptomatic, a success rate of 85% (Table 2). Two of the 17 (both having undergone previous pneumatic dilatation) became symptomatic again one and a half and 3 years after the esophagocardiomyotomy. Three patients were moderately improved postoperatively. One of these three had an esophagocardiomyotomy with cardioplasty. It is not known if this patient's postoperative symptoms represented reflux esophagitis or achalasia. None of the patients who underwent an esophagomyotomy was unimproved. Six patients had a fundoplication either with or after the esophagocardiomyotomy, and all have remained asymptomatic for 2 to 4 years.

Five of the 20 patients seen in followup have gastroesophageal reflux by radiographic criteria, an incidence of 25%. Two of these 5 developed severe esophagitis. Two patients developed pneumonia and one an empyema postoperatively. One patient returned a year after operation with an acute herniation of the stomach into the thorax.

Discussion

In general, this group of patients resembles those reported by others with respect to preponderance of females, age of onset of symptoms, and types and duration of symptoms before treatment.[5,7,11] To our knowledge, however, the observation from this series that approximately two-thirds of the females had the onset of symptoms after age 40 while a similar ratio of males developed symptoms before age 40, has not been made previously. This may represent a sampling error, for in a larger series from the Mayo Clinic no such observation was made.[10]

Two patients developed mid-esophageal epidermoid carcinoma after 30 and 40 years of achalasia, an incidence of 2.6%. This incidence is similar to that reported by others[9] but far less than Adams et al.[1] determined from a much longer followup period.

Although the numbers of patients who were not treated or who were initially treated with anticholinergic medication are small, the results support the general impression that achalasia neither spontaneously remits nor responds to medication.

Our results with dilatation by mercury-filled bougies are not encouraging. In contrast to the report by Benedict,[2] our patients did not obtain more than transient relief. Because of the 6% incidence of esophageal perforation, the belief that bougienage should be used in elderly or very ill patients deserves reappraisal. Also, the more complete and lasting relief obtained by pneumatic dilatation or esophagocardiomyotomy removes bougienage from consideration as a primary treatment for anyone able to undergo those treatments. The usefulness of such dilatation to facilitate endoscopic evaluation and subsequent pneumatic dilatation is not denied.

Because no single group of physicians treats all patients with achalasia who are at the University of Iowa Hospitals, our results indicate a lesser degree of success

with pneumatic bag dilatation and esophagocardiomyotomy than others have reported.[6,10] But this situation allows a comparison of results of treatment for achalasia from a single institution. To the authors' knowledge, this type of comparison of treatment modalities has not been reported previously. Also, although it has been written that mercury bougienage is not beneficial in achalasia, there are no data to support this general impression and in fact as late as 1964, this form of treatment was suggested as a primary treatment modality.[2]

The only treatments of clear benefit to our patients were pneumatic dilatation and esophagocardiomyotomy.

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