NEW METHODS


Results of Treatment with the Endoscope Dilator in 11 Patients with Achalasia of the Esophagus

E. Frimberger, W. Kühner, H. Kunert and R. Ottenjann

Summary
The conservative treatment of achalasia of the esophagus with balloon or mechanical dilators may be difficult, or even impossible, if the esophagus in an advanced illness is so tortuous (sigmoid esophagus) that the dilator cannot be placed in the cardia. An endoscope dilator with the aid of which dilatation is readily possible even in such cases, has been developed by various individuals. Our own experience and the results obtained in 11 patients with esophageal achalasia treated with the endoscope dilator, are presented. The particular advantages of this method of treatment are: simple, low-risk placement of the balloon in the cardia before and during dilatation, and the possibility of inspecting the cardia for complications immediately after dilatation.

Key-Words: Achalasia of the esophagus – Esophageal motor disease – Endoscope dilator – Dilatation for achalasia of the esophagus

Conservative therapy for achalasia of the esophagus consists in dilatation of the cardia. This treatment can be carried out with various instruments, for example Starrck’s dilator (7) or various balloon dilators (2, 5, 9). The placement of the dilator in the cardia is carried out under x-ray control, a previously swallowed guiding thread easing its passage in the case of a tortuous esophagus (4, 10). Initial efforts to make direct-vision passage possible led to the development of a rigid esophagoscope to which a dilatation balloon was attached (1). Recently this principle has been adapted for use with flexible endoscopes (6), the balloon being attached to the endoscope so far distally that while the passage through the cardia was visualized, endoscopic control of the position of the balloon in the cardia was not possible. The final stage of development was completed at almost the same time by various authors (3, 8, 11), who further developed the endoscope dilator so that through vision cardioscopy it became possible to check the correct position of the balloon in the cardia before and during dilatation. This report describes the experience with the endoscope dilator developed by us and used in 11 patients with esophageal achalasia.

Patients and Methods
In the 6 months from February to July 1980 11 patients (5 men and 6 women) with achalasia of the esophagus were treated in the 1st Department of the Municipal Hospital in Munich-Neuperlach. Nine of the patients were treated on an in-patient basis, 2 on an out-patient basis. The ages of the patients ranged from 16 to 74 years, with an average of 41 years. The patients’ symptoms included dysphagia, regurgitation, substernal pain, and a loss of weight extending up to 10 kilograms. Seven of the patients had not undergone any previous dilatation, 3 had already been subjected to dilatation, and one 26-year-old male patient had undergone a myotomy for achalasia years before in another clinic. This myotomy resulted in a severe reflux esophagitis which had been treated by a second operation, a fundoplication. Therewith the patient had renewed dysphagia, for which he was transferred to our hospital. The duration of the symptoms manifested by the 11 patients ranged from 4 months to 10 years. All the patients underwent an esophago-gastro-duodenoscopy before treatment in order to exclude the possibility of another illness, such as a malignant tumor or reflux esophagitis. The diagnosis “achalasia of the esophagus” was based on the patient’s complaints and the results of endoscopy.

Endoscope Dilator
The dilatation of the cardia was carried out with an endoscope with a “pick-a-back” balloon, developed by us and produced according to our specifications by the Olympus Company.

The balloon is affixed directly proximal to the bending section (Fig. 1) of a pediatric gastroscope (GF P2, Olympus). The 3-layered-balloon has an inner and outer layer made of rubber, with in between, a nylon bag which prevents the balloon from expanding beyond a pre-determined diameter of about 4 cm. The balloon is filled with air through a thin tube which runs along the outside of the endoscope. A manometer attached in a subordinate extension permits continuous control of the pressure.

Treatment with the endoscope dilator
Dilatation was carried out in the 11 patients after an overnight fast. Premedication consisted of analgetics and/or sedatives (pethidine, Diazepam). Before introducing the endoscope dilator light sedation was induced in order to prevent aspiration of any possible residual food in the esoph-
agus. If the patient showed signs of pain during the inflation of the balloon, the analgo-sedation was deepened. The endoscope with the "pick-a-back" balloon was introduced in the usual technique with the patient in the left lateral position. After introduction of the instrument some of the patients regurgitated the food left in the esophagus. In these cases the endoscope was removed and reinserted when regurgitation had ended. Generally the esophagus was then empty enough to permit the procedure to be continued, but in one case dilation had to be postponed until the next day since the esophagus was still filled with residual food.

After inversion of the tip of the endoscope in the stomach, the balloon was placed under direct endoscopic control, so that it extended about half-way into the stomach. It proved to be of advantage to have the endoscopist guide the endoscope shaft with his right hand (the left hand holds the endoscope control head), while the balloon is inflated by an assistant. In this way it is possible immediately to counteract any tendency of the balloon to become displaced proximally or distally during inflation, which is effected under continuous endoscopic control.

Results
In every case it was possible to pass the endoscope through the cardia without any difficulty. This was of special interest in the case of the patient with a markedly sigmoid-shaped esophagus and the patient with a previous myotomy/fundoplication: blind placement of the balloon dilator would not have been possible in either of these patients. The aim of treatment by dilation was the relief of the patient's discomfort (no regurgitation and no more dysphagia), or at least an improvement of these symptoms. In order to achieve this goal, a varying number of dilation treatments were necessary in the individual patient. Three patients had 1 dilation session each, 3 patients had 2 sessions each, 4 patients had 3 sessions and one patient needed 9 sessions. In one patient from the group needing 3 sessions and in the patient who underwent 9 dilation sessions, dilation on one occasion was performed with Starnk's mechanical dilator. Each individual session was begun with a pressure of 200–250 mm Hg; in 6 patients the pressure was increased to 300 mm Hg, in 4 patients to 350 mm Hg and in one patient to 400 mm Hg.

The objective of treatment, i.e. relief of discomfort, was achieved in 9 of the 11 patients. A limited, but nevertheless satisfactory degree of success was obtained in 2 cases. At first no satisfactory improvement was observed in the case of the 26-year-old man with a previous myotomy and fundoplication, after 2 sessions employing an inflation pressure up to 350 mm Hg. Three weeks after his discharge the patient informed us that his condition had clearly improved although he was not completely free from discomfort. In the case of the 16-year-old girl who had a total of 9 sessions, one of which with the Starnk dilator, there was only little subjective improvement in the dysphagia and regurgitation. Endoscopically, however, the esophagus, which had been filled with particles of food, was practically empty in the last two sessions. In addition, the patient had gained 2 kg before her discharge.

No perforation occurred in the 11 patients, in a total of 30 dilations (2 performed with the Starnk dilator), and in no case was there any clinically manifest bleeding. Immediately after dilation, endoscopic examination of the cardia revealed an insignificant film of blood on the mucosa.

Discussion
The motivation for the development of our endoscope dilator was a patient with esophageal achalasia who could not be treated with the usual commercial balloon dilator due to her severely tortuous esophagus (sigmoid-shaped esophagus). In view of the positive results obtained with this patient, the endoscope with the "pick-a-back" balloon was used for all subsequent patients admitted to our hospital for treatment of achalasia of the esophagus. Over a period of 6 months, 11 patients were treated in this manner. On the basis of our experience to date the endoscope dilator seems to have the following advantages:

placement of the dilator in the cardia is no problem, since the endoscope can readily be passed into the stomach even in the presence of a severely tortuous esophagus (sigmoid-shaped). x-ray control is no longer necessary on the account of the possibility of endoscopically controlled placement of the balloon in the cardia, both before and during dilation; after dilation, the cardia can be inspected immediately upon extraction of the instrument, massive bleeding and mucosal lesions can be discovered without delay. The successful results obtained with the endoscope dilator are identical — as was expected — with those of the familiar balloon dilators, since the dilation principle is the same. The expected rate of complications with the endoscopic
Results of Treatment with the Endoscope Dilator

method is probably smaller, since the placement of the endoscope dilator in the cardia involves practically no risks in the hands of an experienced endoscopist.

On the basis of our experience, the endoscope dilator can be recommended as an advantageous alternative to the "blind" balloon dilator in the treatment of achalasia of the esophagus.

Acknowledgement

For prompt production of the prototype we would like to thank Mr. Bauhaus from the Olympus Company.

References

5. Plummer, H.S.: J. Amer. med. Ass. 51 (1908) 549–554

Dr. med. Eckardt Frinberger, Dr. med. Wolfgang Kühner, Dr. med. Hans Kunert, Prof. Dr. med. Rudolf Ottenjann, J. Med. Abt., Städtisches Krankenhaus München-Neuperlach, Oskar-Maria-Graf-Ring 51, D-8000 München 83, West-Germany