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POSTOPERATIVE MANAGEMENT OF PATIENTS WITH ESOPHAGEAL ATRESIA

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Abstract

Esophageal atresia remains one of the most problematic pathologies in pediatric surgery. In spite of the fact that the associated mortality rate in developed countries comes to nearly 0 percent, in Armenia it is still 15-30%.

In Armenia "Sourb Astvatsamayr" Medical Centre is the only place, where newborns with esophageal atresia are treated. Since 2003, when the centre was reequipped, we started to use minimal invasive methods for treatment of postoperative complications in these children.

During the last five years 69 newborns (39 boys and 30 girls) with esophageal atresia were treated. Diagnostics of the anomaly is not a hard task, but still only 44% of patients are diagnosed after birth.

The diagnostics algorithm after admission to the hospital includes ultrasound, echocardiography (echoCG) and laboratory investigation.

All the patients underwent standard intensive care unit (ICU) algorithm at admission. Upon stabilizing the condition, patients underwent surgery: mostly on the second day of hospital stay. Extrapleural thoracotomy was used with ligation of the fistula and end-to-end anastomosis in most cases.

All the patients that had surgery for esophageal atresia at "Sourb Astvatsamayr" Medical Centre are followed up to 3 years. In our study, we analyzed postoperative complications of esophageal atresia: in most cases it was anastamotic stenosis.

In the period of 2005-2010, twenty-four newborns (thirteen boys and eleven girls) with esophageal stenosis after atresia repair were treated in Pediatric Thoracic Surgery Department of "Sourb Astvatsamayr" Medical Centre. Sixteen patients (67%) underwent flexible esophagoscopy, among them 10 boys and 6 girls, and no stenosis was found. Follow-up and regular examination of these patients until 3 years of age definitely improves the diagnostics and treatment outcome of esophageal stenosis in children operated for esophageal atresia. Endoscopic balloon dilatation must be used for treatment of esophageal stenosis, because of its being minimally invasive, high effective and affordable.

*Keywords:*esophageal atresia, anomaly, extrapleural thoracotomy, fistula, esophageal stenosis, esophagoscopy, balloon dilatation.

INTRODUCTION

Esophageal atresia is a severe congenital anomaly: the middle intrathoracic part of the esophagus is absent and mostly tracheoesophageal fistula is present. The anomaly remains one of the most problematic pathologies in pediatric surgery in the whole world. Despite the significant achievements in medicine which led to mortality rate in developed countries close to 0% [*Goyal A. et al., 2006; Houben C., Curry J., 2008*], in Armenia this index is far from it. The reasons for that are late diagnosis, multiple associated congenital anomalies, and the high percentage of early postoperative complications that require highly qualified aftercare in the Intensive Care Unit [*Shaw-Smith C., 2006*]. Late postoperative complications leading to life quality worsening are also very important [Kovesi T., Rubin S., 2004].

One of the most frequent complications is the stricture on the site of the anastamosis or esophageal stenosis. The rate of these complications highly increases if anastamotic leakage or other septic complications occur.

In Armenia "Sourb Astvatsamayr" Medical Centre is the only place, where newborns with esophageal atresia are treated. Since 2005, when the centre was reequipped, we started to use minimal invasive meth-

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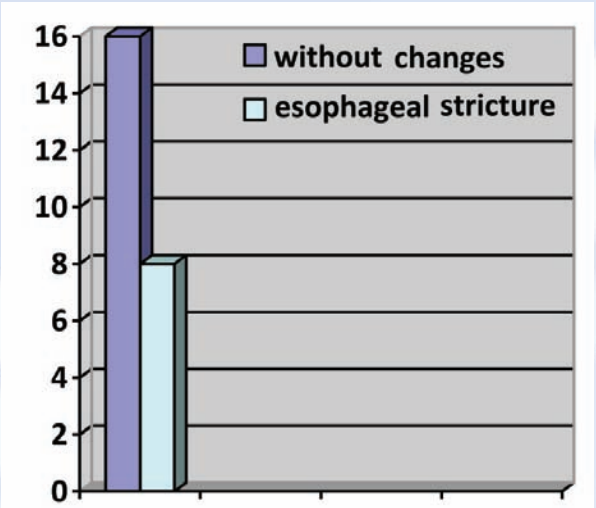

Figure 1. *Results of endoscopy in patients operated for esophageal atresia, 2005-2010*

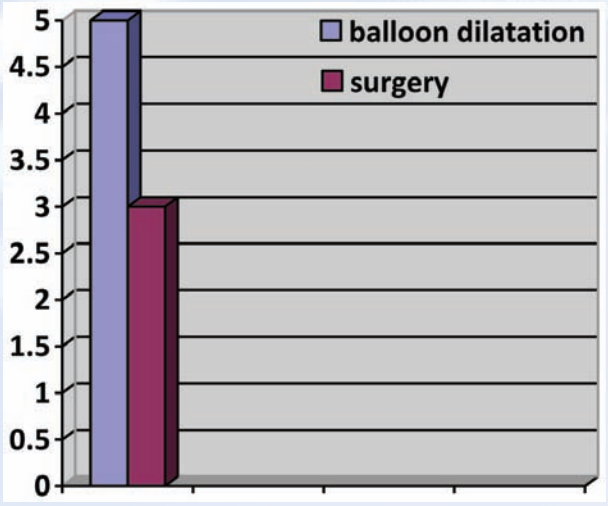

Figure 2. *Medical treatment options in patients with esophageal stricture.*

ods for treatment of post-operative complications in these children.

MATERIAL AND METHODS

During the last five years 69 newborns (39 boys and 30 girls) with esophageal atresia were treated.

Diagnostics of the anomaly is not a hard task, but still only 44% of patients are diagnosed after birth, while in most developed countries this disease is diagnosed prenatally.

After birth in case of the slightest suspicion for esophageal atresia gastric tube should be passed. If the esophagus ends blindly, the tube encounters a barrier. However, the final diagnosis is set only after the X-ray examination with radiopaque tube in the esophagus.

After admission of a newborn with esophageal atresia to the hospital the diagnostics algorithm includes abdominal and retroperitoneal space ultrasound, echocardiography (echoCG) and laboratory investigation.

All the patients are prepared for the surgery at the intensive care unit (ICU) immediately upon admission. Upon stabilizing the condition, patients undergo surgery: mostly on the second day of hospital stay. Extrapleural thoracotomy is used with ligation of the fistula and end-to-end anastomosis in most cases. In different years postoperative lethality ranged from 85.7% to 37.5%.

After surgical intervention for esophageal atresia at "Sourb Astvatsamayr" Medical Centre the patients are followed up to 3 years. Constant control on the state of esophagus is managed. Esophagoscopy is done every 3 months during the first year, then once in 6 months during the second year, and once a year when the baby is 3 years old.

There are early and late postoperative complications. Early postoperative complications include anastamotic leak, stricture, and stenosis of the anastamosis. Late complications are gastroesophageal reflux disease (GERD) and tracheomalacia [*Deurloo J. et al., 2003; 2005*].

Different methods are used for the treatment of esophageal stenosis depending on severity of the stenosis. In our clinic, endoscopic balloon dilation and bouginage through gastrostomy are used.

Balloon dilatation method is used in case of strictures. If the method turns to be inefficient, gastrostomy and filiform (thread-like) or string-guided bougies are used without gastrostomy placement [*Said M. et al., 2003; Saleem M., 2009*].

Results

In our study, we analyzed postoperative complications of esophageal atresia: in most cases anastamotic stenosis.

In the period of 2005-2010, twenty-four newborns with esophageal stenosis after atresia repair were treated in Pediatric Thoracic Surgery Department of "Sourb Astvatsamayr" Medical Centre. The group of patients included thirteen boys and eleven girls.

Sixteen patients (67%), among them 10 boys and 6 girls, underwent flexible esophagoscopy, and no stenosis was found.

In 8 patients esophageal stricture was found. Five patients were treated by endoscopic balloon dilatation, 3 patients were operated. On the second admission, there was no stenosis during endoscopic examination.

An esophageal diverticulum and deformation were found in one girl; the case was treated by multiple dilatations.

Two patients were operated for total esophageal stricture. In these two cases gastrostomy was done and satisfactory results achieved after multiple bouginage procedures.

Conclusion

Follow-up and regular examination of patients operated for esophageal atresia until 3 years of age definitely improves the diagnosis and treatment outcomes of esophageal strictures and stenosis in these children.

Endoscopic balloon dilatation must be used for treatment of esophageal stenosis, because of its minimal invasiveness, high effectiveness, and affordability.

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