

Microanatomical findings in intestinal atresia

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SUMMARY. The birth of a baby with a congenital malfunction of the intestinal tract is a very difficult situation on one hand because of the therapy and on the other hand because of the small age of the patients. Intestinal atresia is a birth defect that affects both anatomical and functional integrity of the digestive tract. This kind of defect is the most common situation of congenital intestinal obstruction, seen in almost 1/3 of the new-borns, being associated in most of the cases with other anomalies. Our study was performed on 18 new-born bowel tissue samples and is based on the embryological theories of production of these defects. Our study found a pronounced microscopic necrosis of the mucous membrane with venous ectasies and hemoragic infiltrates of the submucosis. Also there was a decrease of ganglion cells in the myenteric plexus associated with hypertrophy of nerve fibers.

Keywords: Intestinal atresia, neurocristopathies, neuronal anomalies

Introduction

Intestinal atresia is a birth defect that affects functional and anatomical integrity of digestive tract. Its features are represented by a common radiological and clinical syndrome of neonatal obstruction of the bowel.

There has been a variety of theories regarding the etiology of this abnormality: developmental defects (digestive tube recanalization disorders (Tandler, 1903), inflammatory changes, fetal injuries (intussusception, volvulus, mesenteric defects), late mesenteric intrauterine vascular accidents as the cause of most jejunoileal atresias (Louw and Barnard, 1955).

Recent studies made by (Ure, 1997; Berger, 1998; Masumoto, 1999) support the hypothesis that congenital atresia and stenosis of the digestive tract are the result of the intestinal innervation disorders.

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Materials and methods

Our study presents macroscopic and microscopic anatomical data, resulted from the new-born bowel tissue samples harvested intraoperatively (18) with ages between 3 hours and 3 days, which had type I or type II of ileal or colic atresia after Bland Sutton classification. The pathological specimens were clinically evaluated for identifying the macroscopic lesions and for the microscopic study the samples were histopathologically prepared and examined with a MC 5 optic microscope (ocular 10X, objective 40X).

Results and discussion

The results were compared with samples of normal bowel taken from deceased new-born babies and the general aspect of bowel wall, blood vessels and nervous fibers was presented.

Our study found a pronounced microscopic necrosis of the mucous membrane with venous ectasies and hemoragic infiltrates of the submucosa. Also there was a decrease of ganglion cells in the myenteric plexus associated with hypertrophy of nerve fibers (Figs. 1,2).

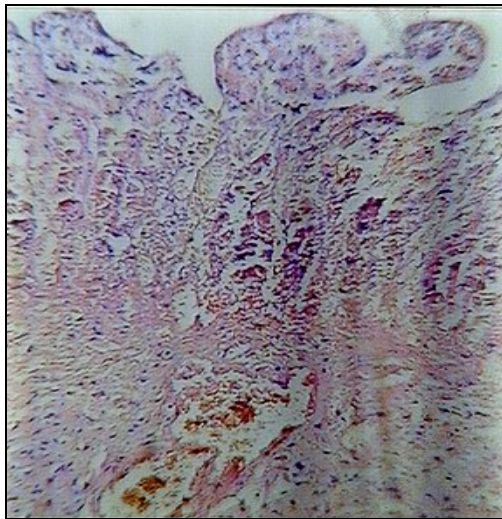


Figure 1. Aspect of small intestine. H&E staining, objective 10X.
Extended areas of hemoragic necrosis inside tunica mucosa
and areas of non-specific infiltrations of the submucosa.

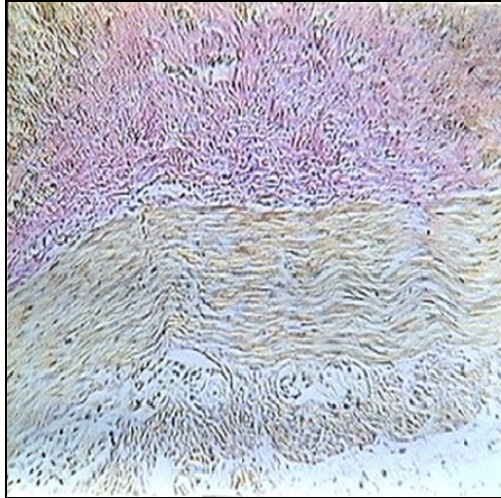


Figure 2. Aspect of small intestine. Van Gieson staining, objective 10X. Submucosa showing discrete edema and diffuse lymphocytic infiltration. The myenteric plexus shows few ganglion cells and many hypertrophic nerve fibers.

Conclusions

Intestinal atresia is the result of the nervous anomalies (aganglionosis and nervous fiber hypertrophy), which induce vascular anomalies, fact that was also shown in our macroscopic and microscopic study. We think that this kind of anomalies can be included in the category of nurocristopathies.

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