

**Проблемы, достижения
и перспективы развития
медико-биологических наук
и практического здравоохранения**

**Труды
Крымского государственного медицинского университета
им.С.И.Георгиевского**

NEONATAL ANATOMY OF THE ILEOCECAL SEGMENT

Yu.T. Akhtemiichuk¹, D.V. Proniaiev¹, T.V. Khmara²

Bukovinian State Medical University, ¹ Department of Anatomy, Topographic Anatomy and Operative Surgery (Head — Prof. Yu.T. Akhtemiichuk), ² Department of Human Anatomy (Head — Prof. B.H. Makar), Chernivtsi

НЕОНАТАЛЬНА АНАТОМІЯ КЛУБОВО-СЛІПОКИШКОВОГО СЕГМЕНТА

Ю.Т. Ахтемійчук, Д.В. Проняєв, Т.В. Хмара

Резюме

Методами мікро- та макропрепарування, морфометрії, рентгенографії, фотодокументування вивчено взаємовідношення, динаміку становлення та варіанти будови складових елементів клубово-сліпокишкового сегмента в 15 трупів новонароджених людини. Ілеальне підвищення здебільшого має губоподібну форму та форму овального сосочка. Виявляються ознаки формування сліпої кишки як окремого анатомічного утворення, про що свідчить збільшення випину протилежної до ілеального підвищення товстокишкової стінки та утворення межі між червоподібним відростком і товстою кишкою.

НЕОНАТАЛЬНАЯ АНАТОМИЯ ПОДВЗДОШНО-СЛЕПОКИШЕЧНОГО СЕГМЕНТА

Ю.Т. Ахтемийчук, Д.В. Проняев, Т.В. Хмара

Резюме

Методами микро- и макропрепарирования, морфометрии, рентгенографии, фотодокументирования изучено взаимоотношение, динамика становления и варианты строения составляющих элементов подвздошно-слепокышечного сегмента у 15 трупов новорожденных человека. Илеальное возвышение в большинстве случаев имеет губовидную форму и форму овального сосочка. Обнаруживаются признаки формирования слепой кишки как отдельной анатомической структуры, о чем свидетельствуют увеличение выпячивания противоположной илеальному возвышению стенки толстой кишки и образование границы между червеобразным отростком и толстой кишкой.

Key words: intestine, ileocecal junction, newborn, human.

Diverse lesions of the ileocecal segment (ICS) and the functional incompetence of atypical anatomical variants of the ileocecal obturative apparatus are common indications for its resection and surgical correction. The specific characteristics of surgical maneuvers within the range of the ICS depends on variants of its structure [1, 2]. It has been demonstrated that following ICS resection the digestive system loses its important controlling apparatus which coordinates its motor activity and regulates the speed of the advance of chymus [3–5]. After removing this segment a top priority tasks is a formation in the transitional region between the small and large intestines of such a structure which corresponds by its function to the ileocecal obturative apparatus. Therefore, a study of the anatomical features and variants of the structure of the ileocecal sphincterovular apparatus is a topical task of the anatomical sphere [6–8].

To study anatomical interrelations, the specific characteristics of forming and variants of the structure of the constituents elements of the ICS in newborn infants.

Material and methods

The research has been carried on 15 corpses of neonates more than 500,0 mm of the parieto-calcaneal length (PCL) of both genders by means of the methods of micro- and macrodissection, morphometry, roentgenography, photodocumenting. The diameter of the terminal portion of the ileum (TPI) was measured immediately near the place of its entry into the large intestines. The diameter of the ascending colon (AC) was measured immediately over the TPI. The length of the vermiform appendage (VA) was measured from its summit to the base. The diameter of the cecum was measured from the inferior wall of the TPI to its cupula. The obtained findings were recorded in the protocols and processed by means of the method of variational statistics.

The results of the investigation and their discussions

The neonatal TPI represents a distally curved cylinder, filled with meconium. The TPI is covered with the peritoneum on all sides, has a well-marked mesentery and is distinguished by considerable mobility. In the majority of cases (11 specimens), the TPI is directed dorsocranially and

laterally and in four cases dorsolaterally in the horizontal plane. The TPI position is influenced by its interrelation with the sigmoid colon. In 12 cases the ileum disgorged into the cecal medial wall, in 3 cases into the dorsal one. At the site of the ileocecal junction the TPI forms a flexure, resulting in the formation of an angle (60-100°) between the longitudinal axis of the ileum and the axis of the ileal papilla. The TPI diameter makes up 7.8–10.2mm, the diameter of ascending colon (AC) always exceeds the TPI diameter and constitutes 9.5–11.3mm.

The caecum represents a spheroidal prominence of the opposite cecal wall to the ileal prominence (IP) with a diameter of 10.0–13.0 mm. The cecal cupula is directed caudally in 8 cases, in 7 — caulolaterally. In 10 cases the cecal cupula was located at a distance of up to 8 mm below the right kidney, whereas in 5 cases the cecum was fixed to its inferior pole. The AC has the form of a cylinder, it is directed craniomedially, it is fixed to the capsule of the anterior surface on a certain site. The vermiform appendix (VA) in hook-shaped and is located and intraperitoneally, and its lumen is filled with meconium. Its characteristic feature is the presence a narrowing of its lumen near the base, sharing as a sign of a formation of a boundary between the VA and the cecum, however, the mucosal fold near the base of the appendix (Gerlach's valve) is poorly marked. The

VA length varies from 42.0–57.0 mm. The VA base is directed towards the opposite side from the cecal capsula. In 7 cases VA is set among the loops of small intestine, in 8 cases under the right kidney. The ratio of its length to the PCL max upto 11.1:1. The IP has a lip-shaped structure in 9 cases (fig. 1), in 6 cases it is represented by a papillae (4 — an oval-shaped papillae perpendicular to the AC axis, in 2 cases it is round papillae). The IP opposition in all cases corresponded to the anterior surface of the inferior 1/3 of the right kidney.

Thus, the structure and location of the ICS constituent elements in the newborns is relatively stable. A diversity of IP forms evidence that the ICS formation continues during the period of neonatality. The presence of meconium in the VA lumen is indicative of existing incompleteness of its valve a considerable dilatation of the cecum, a formation of a boundary between it and the VA, the presence of the valvular component of the valvosphinctoral apparatus point to the cecal functional activity. Although the structure of the illocecal segment in newborn is similar to the definitive state[9], the result of this particular research have every reason to assert that its forming goes on during the period of neotallity. In conformity with the conception of consistent pattern of the structure and functioning of the digestive tract [10] the forming of the IP structure

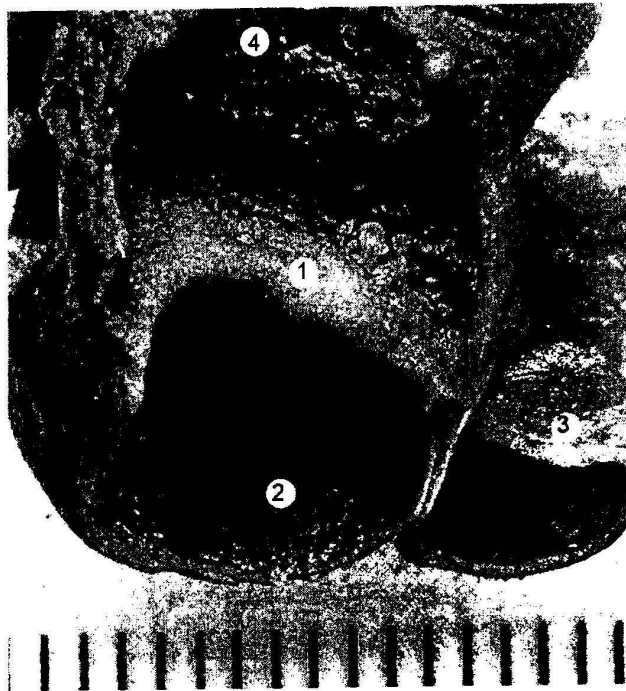


Fig. 1. Ileocecal segment of newborn.
1 — ileal prominence; 2 — cecum; 3 — terminal portion of the ileum; 4 — ascending colon.

in neonates depends on the degree of definitive forming and functional activity of other "key points" of the gastrointestinal tract.

Conclusion

1. An elevation of the large intestinal wall opposite to the ileal prominence and formation of boundary between the vermiform appendix and the large intestine are the signs of the formation of the cecum in newborn infants as a separate anatomical formation.

2. The presence of meconium in the lumen of VA due to incompleteness of its valve evidence that the development of iliocecal segment continues during the period of neonatality.

3. The process of formation of iliocecal sphincterovervalvar obturative apparatus proceed under the action of meconium pressure which, in its turn, depends on the functional activity of gastrointestinal tract.

Prospects of the further researches

The studies of the processes of forming of the iliocecal sphincterovervalvar obturative apparatus in newborns carried out by the authors require further conformation on basis of studying this particular portion in children of early age.

Literature

1. Ормантаев К.С., Ахпаров Н.Н., Аипов Р.Р. Клинико-функциональная диагностика и хирургическое лечение недостаточности илеоцекального запирающего аппарата у детей // Дет. хирургия. — 1999. — № 1. — С. 6–9.
2. Wakhlu A.K., Wakhlu A., Pandey A., et al. Congenital Short Colon // World J. of Surgery. — 1996. — № 20. — P. 107–114.
3. Жученко С.П., Жученко А.С. Хирургическое восстановление илеоцекального отдела при баугиностенозе // Матер. доп.

наук.-практ. конф. „Акт. пит. хірургії”. — Київ-Хмельницький-Вінниця, 1997. — С. 208–209.

4. Муладзе Р.Б., Бакиров А.А. Тотальная эзофагопластика фрагментами правой половины толстой кишки при стриктурах пищевода // Анн. хирургии. — 2000. — № 5. — С. 17–20.
5. Муладзе Р.Б., Бакиров А.А. Эзофагогастропластика при стриктурах пищевода // Анн. хирургии. — 2000. — № 6. — С. 31–33.
6. Ватаман В.М., Кулачек Ф.Г., Тутченко М.І. та ін. Чи потребує корекції оперативна хірургія кишечника з позиції сегментарності будови та функції травного каналу // Матер. доп. наук.-практ. конф. «Акт. пит. Хірургії». — Київ-Хмельницький-Вінниця, 1997. — С. 64–65.
7. Мороз І.В., Півторак В.І., Костюк Г.Я., Богачук С.Г. Морфометричне та математичне обґрунтування реконструктивного ілеоцекоколоанастомозу «кінець у бік» // Вісн. морфології. — 2000. — Т. 6, № 2. — С. 335–337.
8. Серова Л.С. Возможности формирования энтероанастомоза вблизи слепой кишки // Харківська хір. школа. — 2000. — № 2. — С. 52–55.
9. Волкова О.В., Пекарский М.И. Эмбриогенез и возрастная гистология внутренних органов человека М.: Медицина 1976. — 415 с.
10. Ватаман В.Н., Брызицкий А.Б., Швец В.И. и др. «Узловые пункты» как морфофункциональные комплексы сегментов пищеварительного канала // Органые особенности морфогенеза и реактивности тканевых структур в норме и патологии: Труды Крымского медицинского института. — 1989. — Т. 125. — С. 1–28.