



SOME FEATURES OF THE NORMAL MORPHOLOGY OF THE RECTUM IN WHITE OUTBRED RATS

Saidov Hamid Rustamovich

Khasanova Dilnoza Akhrorovna

Bukhara State Medical Institute

Article history:

Received: April 26th 2024

Accepted: May 24th 2024

Abstract:

This scientific article examines some features of the normal morphology of the rectum in white outbred rats. The purpose of the study was to study the anatomical and structural characteristics of the rectum in non-breed rats to gain a more complete understanding of its functions and possible abnormalities. The technique included anatomical and histological analysis of the rectum in 50 white outbred rats. Parameters such as length, diameter and structure of the walls of the rectum were studied. The results were also compared with data from previous studies on this topic. The study results showed that the rectum in outbred albino rats has similar anatomical and structural characteristics to the rectum in other rat species. However, some differences have been identified in the length and diameter of the rectum in outbred albino rats compared to other species.

Keywords:

RELEVANCE. Currently, the anatomy and physiology of laboratory animals are described in numerous scientific papers, but only in some cases a comparative analysis of the information obtained is carried out. At the same time, when conducting preclinical studies using laboratory animals, questions often arise already at the planning stage, related to the need to extrapolate data obtained from laboratory animals to humans. A large number of models of different species and families of animals (rabbits, rats, mice, hamsters, guinea pigs, etc.), their different structure and physiology, histological features of tissues and biochemical processes, may present difficulties for the researcher. Since most of the medicinal substances are intended for oral administration, an important task is to study the gastrointestinal tract of laboratory animals and compare its function and structure with the human intestine. The residence time of substances in the digestive tract and the rate of their absorption can vary significantly between species, which depends on anatomical data (length of sections, rate of peristalsis), physiological factors (acidity, quality of bile and pancreatic juice, etc.), biochemical processes and the composition of microflora. Therefore, it is important to take into account these features and anticipate their effect on the metabolism of the substances under study. The rectum, which is the final part of the digestive tract, performs the most important functions. This explains the large number of publications that have appeared on functional morphology and various types of pathology of this organ. Surgical interventions on the rectum are difficult due to the relatively inaccessible pelvic position

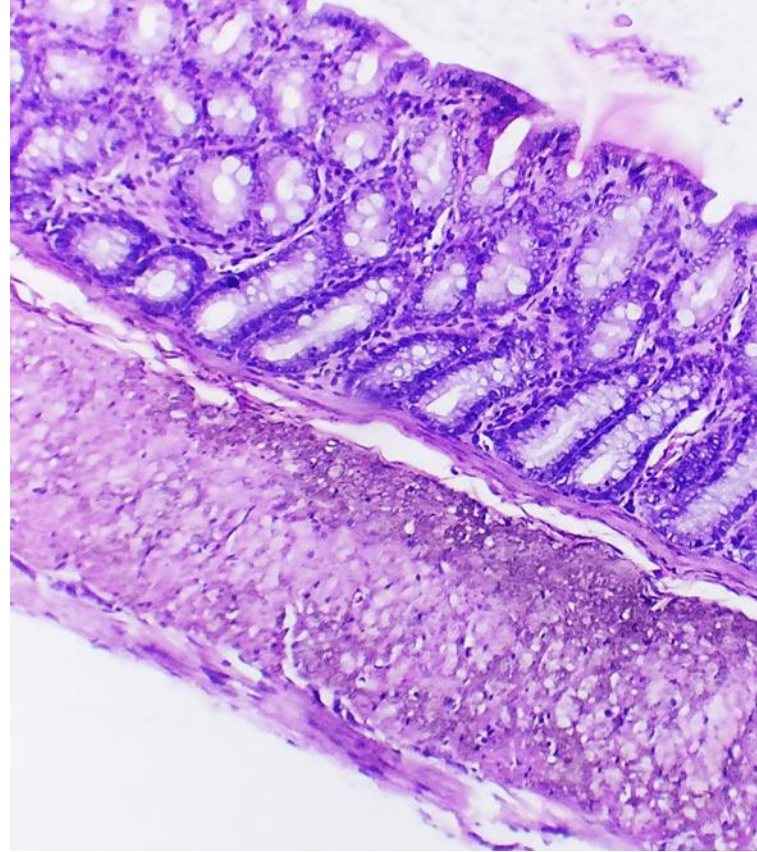
of the rectum and its direct relationship to many vital structures. It is recognized that, despite the importance of these problems, the surgical anatomy of the rectum has not been sufficiently studied.

THE PURPOSE OF THE STUDY. Цель настоящего исследования заключается в детальном описании и анализе нормальной морфологии прямой кишки у белых беспородных крыс с целью выявления особых структурных и функциональных особенностей этого органа, которые могут иметь важное значение для понимания физиологических процессов и патологий, связанных с прямым кишечником у этого вида крыс.

MATERIALS AND METHODS OF RESEARCH. The study was carried out on 50 white mongrel male rats of reproductive age weighing 200.0 ± 20.0 grams. Initially, after euthanasia by overdose of thiopental sodium anesthesia (75 mg / 1 kg of animal body weight intramuscularly into the upper third of the thigh of the hind paw), all animals underwent in turn the usual sectional removal of the anterior wall of the thoracic and abdominal cavities and photographing their contents. After that, in animals, we resorted to traditional anatomical dissection, which consisted in cutting off those organs or individual formations that made it difficult to examine the desired object. In terms of expediency, these manipulations will be noted when describing the results of the study.

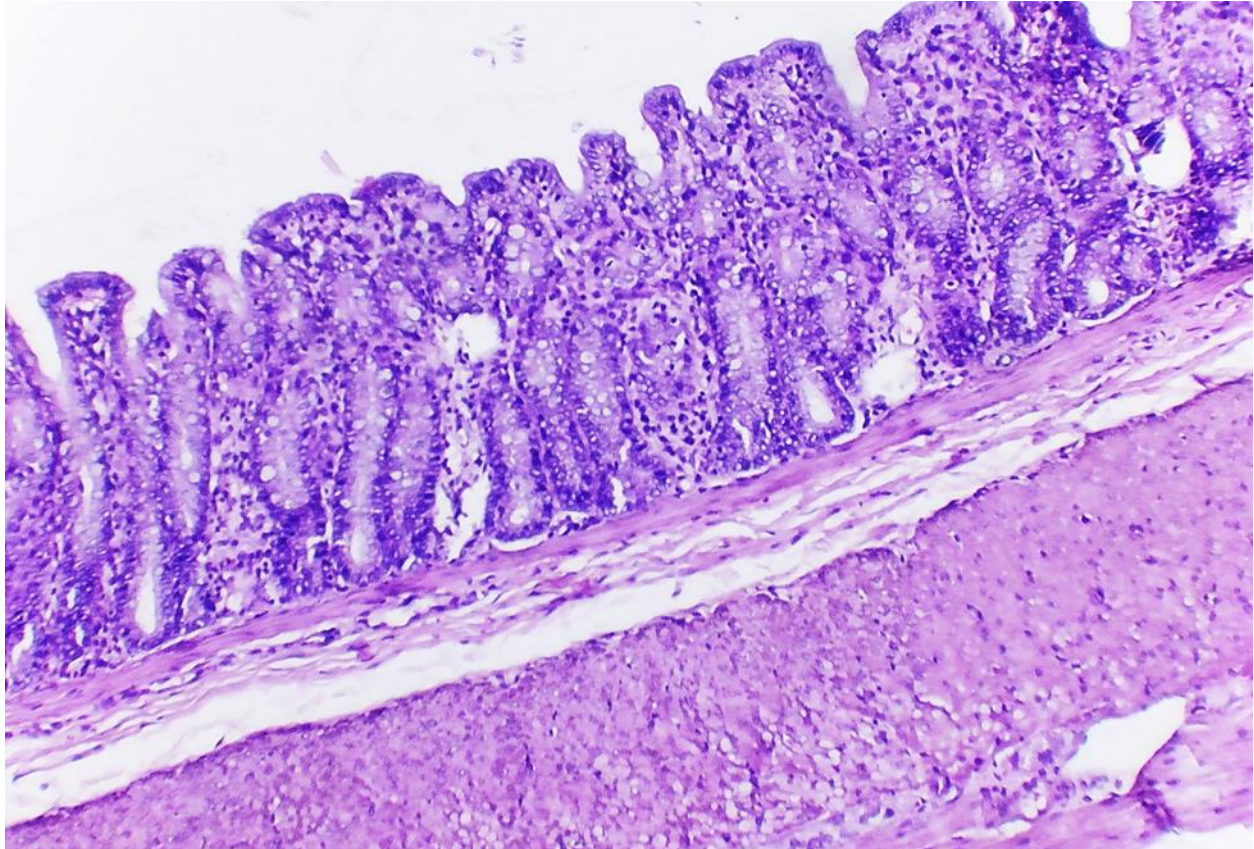
RESULT AND DISCUSSIONS. When opening the abdominal cavity in white rats, first of all, the difference

between this picture and the one that occurs in humans is noticeable. It lies in the fact that in these animals, after removing the anterior abdominal wall, mainly the outer loops of the small intestine are exposed, which are not, as in humans, framed by the colon. In order to understand the peculiarities of its shape and topography, we had to selectively remove the loops of the small intestine, but keeping the stomach with the duodenum in its natural position.



(Figure 1) – Rectum of white mongrel rats. The transition of the intestinal epithelium to the squamous epithelium. Staining hematoxylin eosin. Magnification of 100

As a result, it was found that the colon in white rats differs significantly from that of humans in that it is a simplified form of structure, but with the presence of a more developed department, which is the caecum. This department deserves special attention because it is secreted in the gastrointestinal tract of white rats with a rather large extent, comparable only to the stomach. Along the way, we note that a significant part of the posterior abdomen in male white rats (outside the period of sexual activity) is occupied by testicles, which are individually as large as the caecum, located slightly higher between them. This will be correct, adjusted for the fact that in some individuals it turns out to be shifted somewhat to the right, and in others to the



(Figure 2) – Rectum of white mongrel rats. The transition of the intestinal epithelium to the squamous epithelium. Staining hematoxylin eosin. Magnification of 100

It is quite possible that this applies to individual options. But considering that it has a certain degree of mobility due to the presence of a mesentery, we believe that in each specific case, after vivisection of an animal, the position of the caecum depends on its lifetime functional state. In accordance with this, the volume of the caecum is naturally variable, which is found, for example, after daily starvation of animals and immediately after morning feeding in comparison with the stomach. Thus, in starving animals due to a collapsed stomach, the volume difference between it and the caecum becomes even more pronounced due to the expansion of the latter. It should be noted that the caecum in rats, together with the stomach, occupy the bulk of the abdominal cavity, being located close to each other, being interconnected by a relatively long (about one meter) transitive department, which is the small intestine. Based on the consideration that food products, after undergoing enzymatic processing in the stomach, undergo a loss in mass as they move through the small intestine as a result of absorption of nutrients, one might think that the caecum, into which the remaining chyme enters, should be smaller in size than the stomach, as is the case in humans. However, as

already mentioned, the dimensions between these two nodal organs of the digestive tract are in the opposite relation. Currently, this phenomenon is not given any importance in the literature, although clarifying it is very important for experimental medicine.

CONCLUSIONS. The research may be useful for further research in the field of gastroenterology and zoology, as well as for veterinary practice. The data obtained can help to better understand the normal functions of the rectum in white mongrel rats and identify possible abnormalities or diseases associated with this organ.

1. The colon of white rats differs from the corresponding department of the human gastrointestinal tract by some very significant anatomical features that are inherent primarily in its two departments - the caecum and the initial department the colon.
2. The most distal part of the small intestine of white rats is the direct entrance to the caecum, which is located next to the exit of the initial part of the colon, which gives reason to consider it (the caecum), unlike that of humans, a special, exceptionally extensive, nodular



reservoir, the maximum capacity of which is almost twice as large the capacity of the stomach.

3. A completely unique formation in the gastrointestinal tract of white rats is the initial part of the colon, in which the mucous membrane forms a kind of corrugated folding, consisting of two rows of oblique semicircular folds-ruffles, strictly ordered on two sides of the intestinal tube. In their general configuration, an adaptation is seen that serves for the granular formation of fecal masses.

REFERENCES:

16. Аксененко А.В., Федрунов А.Ю. Клинико-эндоскопические и нейрогистологические особенности сфинктера О'Берна-Пирогова-Мутье // Физиология и патология секреторных аппаратов пищеварительной системы. - 1989.- С. 20-23.
17. Аминев А.М. Руководство по проктологии. Т. 1. - Куйбышев: Кн. изд-во, 1965. – 518 с.
18. Ашкрафт К.У., Холдер Т.М. – Детская хирургия. Т. 2. – СПб, 1997. – 392 с.
19. Баженов Д.В. Регенерация мускулатуры тонкой кишки в условиях эксперимента // Арх. анат., гистол. и эмбриол. - 1973. - № 6. - С. 81-84.
20. Баженов Д.В., Никитюк Д.Б. Пищевод человека. Структура и функция. - Тверь, 1997. - 162 с.
21. Баженов Д.В. Пищевод /Руководство по гистологии. Т.2. Частная гистология органов и систем.- СПб.: СпецЛит, 2001.- С.97-104.
22. Баженов Д.В., Банин В.В., Петрова М.Б. Филогенез мышечной оболочки пищевода позвоночных. – Тверь, 2005. - 159 с.
23. Бармин В.Ф., Студницкий В.Б., Медведев М.А. Изменение электрической и сократительной активности гладкомышечных клеток внутреннего анального сфинктера котов при смене буферов в растворе // Физиология и патология моторной деятельности органов пищеварительного тракта. - 1992. - С. 37-38.
24. Байтингер В.Ф. Сфинктеры пищеварительного тракта. - Томск, 1994. - 26 с.
25. Бондарь Г.В., Думанский Ю.В., Борота А.В., Башеев В.Х. Хирургическая профилактика и коррекция осложнений оперативного лечения рака прямой кишки // Акт. проблемы колопроктологии. - М: Медпрактика, 2005. - С. 171-172.
26. Валиев А.А., Гатауллин И.Г., Петров С.В. Иммуноморфологические аспекты диагностики колоректального рака // Акт. вопросы колопроктологии. - М., Медпрактика, 2005. - С. 174- 175.
27. Галахова П.И. Строение и особенности взаимоотношений венозных и лимфатических сосудов с тканевыми структурами в анальном отделе прямой кишки человека // Вопросы функциональной анатомии сосудистой системы. - М., 1973. - С. 60-61.
28. Галахова П.И. О взаимоотношениях мышечных, эластических и венозных структур в стенке анального канала человека //Вопросы морфологии кровеносной и нервной системы. - Куйбышев, 1975. - С. 44-49.
29. Гелашвили П.А., Галахов Б.Б., Юхимец С.Н., Панидов К.В. Морфологические особенности венозных конструкций стенки анального канала прямой кишки человека //Морфологические ведомости. – 2009. - № 2-3. -С. 155-157.
30. Гелашвили П.А., Галахов Б.Б., Юхимец С.Н., Супильников А.А., Панидов К.В. Параметры гемомикроциркуляторного русла толстой кишки в онтогенезе человека с позиций морфологического и математического анализов // Морфологические ведомости. - 2011.- № 2.- С. 85-89.
31. Саноев Б. А., Рахматов А. А., Олимова А. З. Цитологический скрининг заболеваний шейки матки: ПАП-тест исследования в Бухарском областном диагностическом центре за период 2015-2019 годы //Новый день в медицине. – 2020. – Т. 3. – С. 31.
32. Саноев Б. А., Мухидова Г. Х. Макро и микроскопические проявления полипа эндометрия //Oriental renaissance: Innovative, educational, natural and social sciences. – 2022. – Т. 2. – №. 2. – С. 835-840.



33. Саноев Б. А., Ниёзова Т. Ш., ПРОЯВЛЕНИЯ Н. ЛЕЙОМИОМ МАТКИ//Новый день в медицине //Номер. – 2020. – Т. 2. – С. 526-528.
34. Abdurasulovich S. B. et al. HEART DISEASES IN FORENSIC MEDICAL PRACTICE: SUDDEN CARDIAC DEATH //World Bulletin of Public Health. – 2022. – Т. 8. – С. 76-79.
35. Саноев Б. А. Морфологические и морфометрические характеристики плаценты при нормальной БЕРЕМЕННОСТИ.« //DEVELOPMENT OF A MODERN EDUCATION SYSTEM AND CREATIVE IDEAS FOR IT, REPUBLICAN SCIENTIFIC-PRACTICAL ONLINE CONFERENCE ON"" SUGGESTIONS AND SOLUTIONS. – Т. 6. – С. 94-96.