

**THE MORPHOLOGY AND THE ARTERIES OF THE OVARY AND THE UTERUS IN THE
MOLLE RAT (SPALAX LEUCODON)**

ZORA NIKOLIĆ, ZDENKA BLAGOJEVIĆ, D. VITOROVIĆ and VERICA MRVIĆ

Faculty of Veterinary Medicine, Beograd

(Received, 25. May 1994.)

Studies were made on the morphology, topography and arteries of the ovary and the uterus in the molle rat.

The ovary is a paired gland, lentiform in shape and 4-6 mm long. It is yellowish in colour and soft-elastic in consistency. The ovarian bursa is deep and wide. It is formed of the Ligamentum ovarii proprium and the Mesosalpinx. The left ovary is situated at the L 4.-5. and the right one at the L3.-4. vertebral level. The ovarian artery a branch of the abdominal aorta, is the main blood vessel which supplies the ovary.

The uterus in the molle rat is the uterus duplex. The lumina of the uterine horns are completely separate and open as a paired external orifice. The uterus is supplied by the uterine artery (A. uterina). The uterine artery arises from the umbilical artery in a common trunk with the vaginal artery.

Key words: Molle rat, ovary, topography, uterus, A. ovarica, A. uterina

INTRODUCTION

This paper is a study of the morphological, topographical and arterial characteristics of the ovary and the uterus in the molle rat (*Spalax leucodon*). The molle rat is a rodent which lives under the ground and its eyes are covered by skin.

The literature shows that some authors have already examined the morphology of the female genital organs in experimental rodents. Thus, the female genital organs in the rat have been studied by Hebel and Stromberg (1976.), the uterus and the vagina in the ground squirrel by Nikolić et al. 1993., the ovary and the uterus in the guinea pig, hamster and rabbit by Del Campo and Ginter (1972), and Brody and Cunha, (1989). However, when attempting to gather data on the genital organs in the molle rat, we found that, except for work done on the arteries of these organs (Blagojević, 1981.) no other information has been recorded. For this reason, we undertook a detailed study of the morphology, topography and arteries of the ovary and the uterus in this animal. The results of our investigations were compared with those for other experimental rodents.

MATERIAL AND METHODS

In this investigation the ovaries and the uterines of 20 adult female molle rats were examined. All animals were bled from the abdominal aorta.

For the studies of the morphology and topography of the ovary and the uterus we observed two groups. One group of animals was studied immediately after bleeding. The second group was preserved in 3% formaldehyde solution.

The ramification of the arterial blood vessels was studied in preparations injected with gelatin stained with minium.

For histological studies the ovaries and the uterus were fixed in Bouin's solution, infiltrated with paraffin and cut into 5 mm thick sections which were then stained with hematoxylin eosin.

RESULTS AND DISCUSSION

The ovary is a paired, lentiform gland (Figure 1₁). Its length is 4-6 mm. A single adult ovary in the molle rat weighs 25-35 mg. In the adult rat it is

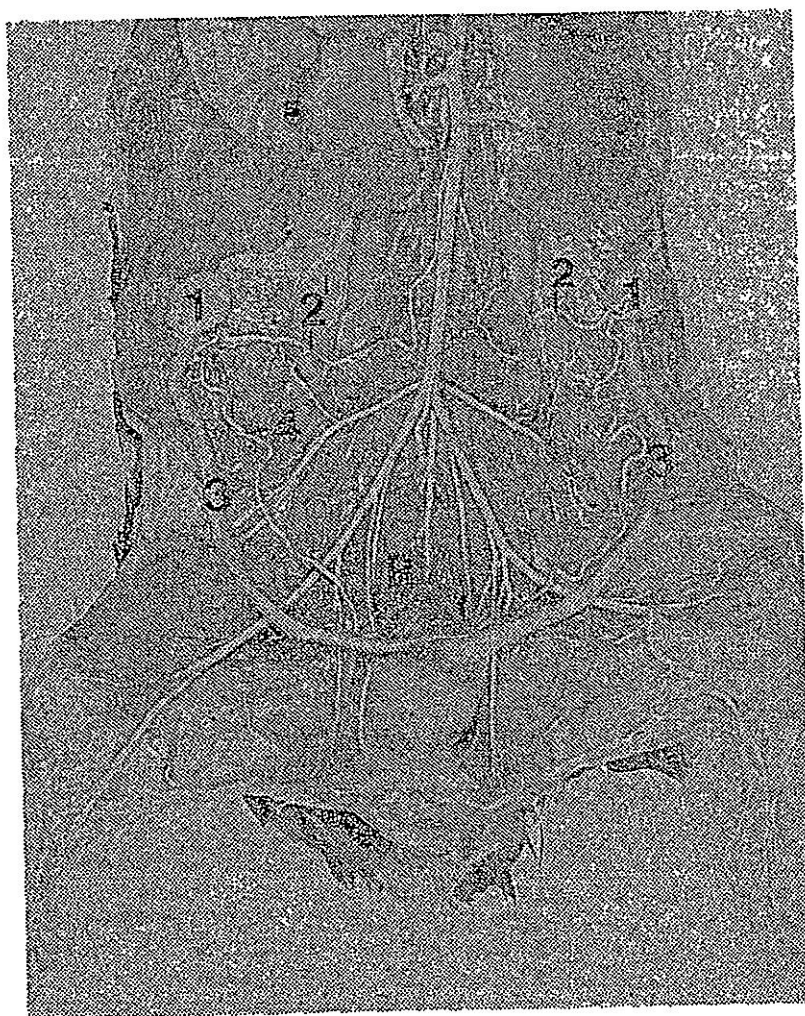


Figure 1. The ovary, the uterus and its arteries in the molle rat
1-Ovarium, 2-A. ovarica sin., 2'-A. ovarica dex., 3-Cornu uteri, 4-A. uterina dex., R-Rectum

much heavier and weighs about 60 mg (Hebel and Stromberg, 1976.), or at 90 days old it may reach 90 mg in weight. Nikolić, 1985.). The ovary in the molle rat is yellowish in colour while it is reddish in the rat (Hebel and Stromberg, 1976.). The ovary is soft-elastic in consistency. The lateral surface is a little convex and the medial one nearly flat. *Extremitas tubaria* is twisted cranio-medially and *Extremitas uterina* caudo-laterally.

The ovarian bursa in the molle rat, as in the rat (Hebel and Stromberg, 1976.) is formed of the *Ligamentum ovarii proprium* and the *Mesosalpinx*. The proper ligament of the ovary lies medial to the loops of the oviduct and near the tip of the uterine horn it fuses with mesosalpinx. Together the latter two ligaments form the ovarian bursa. This deep and wide ovarian bursa completely covers the ovary. The ovarian bursa in the ground squirrel (Nikolić et al. 1993.) is formed of the wide mesosalpinx.

The right ovary is situated at the lateral border of the *psaos major* muscle at the level of the 3.-4. th lumbar vertebral, caudally in relation to the right kidney. In the ground squirrel (Nikolić et al. 1993.) the right ovary is at L4.-5. This ovary contacts the duodenum.

The left ovary is located about 2 mm caudally from the right one. It lies opposite to the 4.-5th lumbar vertebral, along the lateral edge of the left *psaos major* muscle, caudally from the left kidney. In the ground squirrel (Nikolić et al. 1993.) it is at the level of L5.6. The left ovary touches the left colon.

In the molle rat the parenchymatous zone makes up the cortex and the vascular zone the medulla of the ovary. The histological structure of the ovary in the molle rat is similar to that in the ground squirrel (Nikolić, et al. 1993.) and the rat (Hebel and Stromberg, 1976.). In the parenchymatous zone there are follicles and in the vascular zone blood vessels, branches of the ovarian artery and vein (Figure 2.).

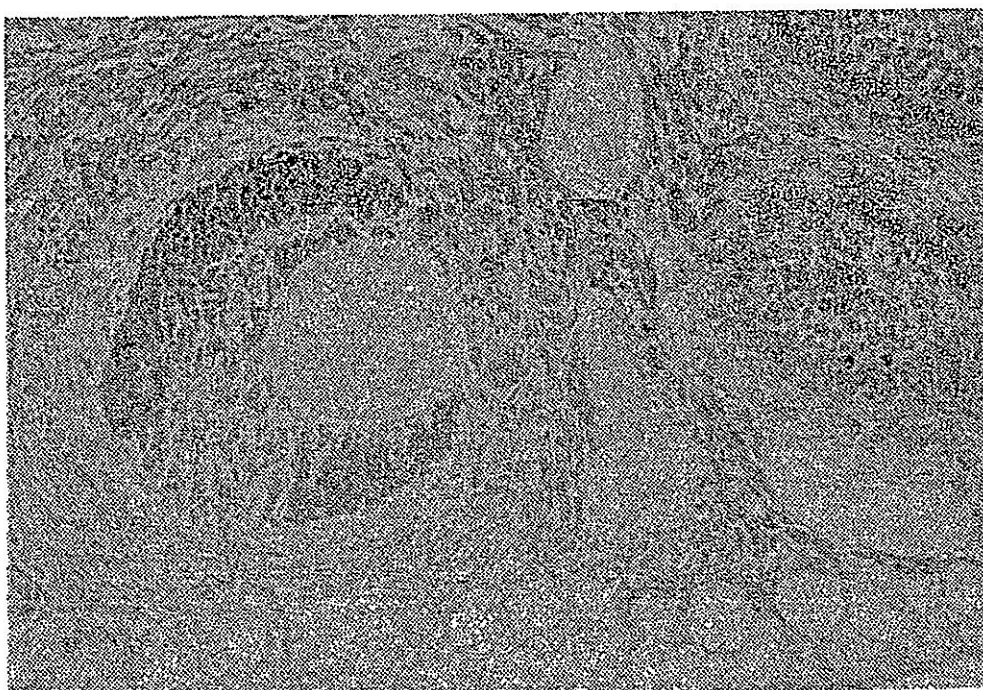


Figure 2. The parenchymatous zone of the ovary in the molle rat

The ovarian artery (Figure 12) is the main blood vessel which brings the arterial blood into the ovary. It goes out from the ventral side of the abdominal aorta. The left ovarian artery goes out 1 mm behind of the renal artery similar to the hamster (Ogura et al. 1985.). In the ground squirrel (Stanojević, 1965.) and the guinea pig (Favre, 1967.). A. Utero-ovarica branch from the abdominal aorta. The right ovarian artery (Figure 12) in the molle rat is 1 mm more cranial than the left one. The ovarian artery is a long, thin vessel and runs caudolaterally in form of a snake towards the ovarian hilus.

The uterus in the molle rat (Figure 13) is similar to that in the rat (Schleyer, 1971.) and the ground squirrel (Nikolić et al. 1990.) and is classified as a uterus duplex. The lumina of the uterine horns are completely separated and open as a paired external orifice. In the ground squirrel (Nikolić et al. 1990.) these two openings are covered with a wrinkle of mucous membrane which starts from the dorsal wall of the vagina.

A partial fusion of the two horns occurs caudally in that they share a common outer longitudinal layer of myometrium. However, the circular layer merely exchanges fibers. The uterine horns are 30-40 mm long similar to those in the rat (Hebel and Stromberg, 1976.). The right uterine horn is a little longer than the left one. The right horn lies ventral to the quadratus lumborum muscle

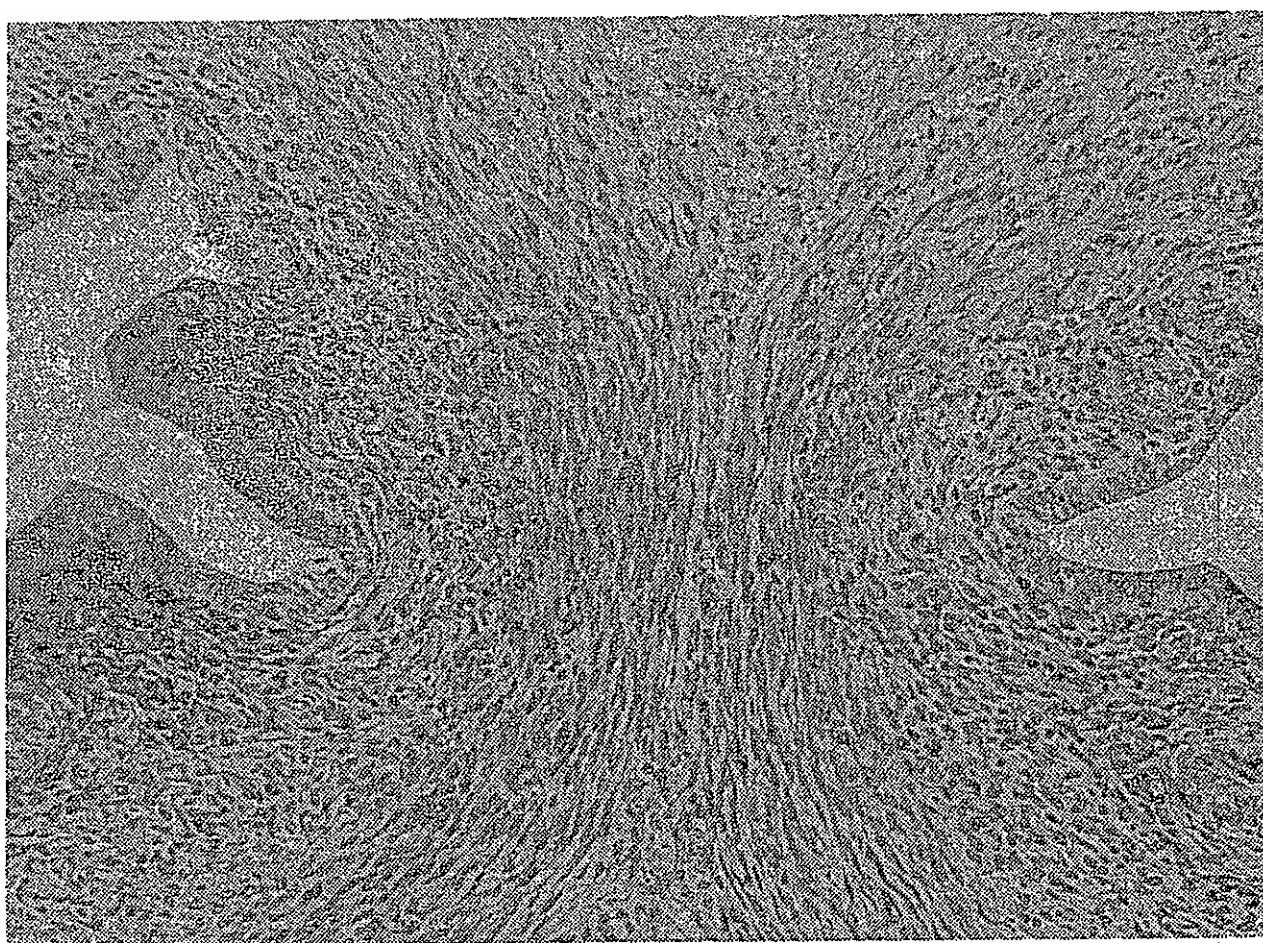


Figure 3. The histological structure of the uterine horns of the molle rat (25 X)

and bends slightly towards the midline. The left uterine horn crosses below the psoas muscle further cranially as it approaches the midline. It runs ventral to the rectum to the site of fusion (Figure 1A). The external uterine orificies are deeply located among more mucosal cushions which project into the vaginal lumen as the portio vaginalis uteri.

The broad ligament (*Ligamentum latum uteri*) of the uterus is long and contains fat deposits. The cranial part of the broad ligament inserts dorsally and further caudally the line of insertion moves laterally.

The uterine mucosa is lined with a simple columnar epithelium (Figure 3) and forms low longitudinal folds. The uterine muscles have longitudinal and circular layers similar to those in the rat and mouse (Brody et al. 1989.).

The uterus of the molle rat is supplied by the large uterine artery (*A. uterina*). This artery (Figure 14) is a large blood vessel which runs cranially through the broad ligament in the form of a snake towards the uterus. In the ground squirrel (Stanojević, 1965.) two arterial vessels supply the uterus, *A. uterina* and *Ramus uterinus* of the *A. utero-ovarica*. The uterine artery in the molle rat arises from the umbilical artery in a common trunk with the vaginal artery. In the hamster (Ogura et al. 1985.) *A. uterina* arises from the umbilical artery in a common trunk with *A. vesicalis cranialis*.

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MORFOLOGIJA I ARTERIJE JAJNIKA I MATERICE SLEPOG KUČETA (SPALAX LEUCODON)

ZORA NIKOLIĆ, ZDENKA BLAGOJEVIĆ, D. VITOROVIĆ I VERICA MRVIĆ

SADRŽAJ

U radu su proučavani morfologija, topografija i arterije jajnika i materice slepog kučeta. Jajnik je paran organ, sočivastog oblika i dužine 4–6mm. Žućkaste je boje i mekano-elastične konzistencije. Bursa ovarii je duboka i široka. Formiraju je Lig. ovarii proprium i Mesosalpinx. Levi jajnik leži u visini 5.–6. a desni 4.–5. slabinskog pršljena. A. ovarica, grana trbušne aorte, je glavni krvni sud koji snabdeva krvlju jajnik.

Materica slepog kučeta je Uterus duplex. Lumen materičnih rogova je odvojen i svaki se otvara kao spoljašnji otvor. Matericu snabdeva krvlju A. uterina. Ova arterija zajedničkim stablom sa A. vaginalis izbija iz A. umbilicalis.