

**EXTRAHEPATIC VEINS OF THE PORTAL SYSTEM IN THE SMALL GREEN MONKEY
(*Cercopithecus aethiops sabeus*)**

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

*Faculty of Veterinary Medicine, Bulevar JNA 18, 11000 BEOGRAD, YUGOSLAVIA,**

**Faculty of Agriculture, Zemun

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In this paper extrahepatic veins of the portal system in the small green monkey were investigated. The portal vein is the main blood vessel which drains blood from the spleen, stomach, pancreas, and intestines except for the rectum. V. portae is comprised of five vessels: V. gastrica sinistra, V. pancreaticoduodenalis cranialis, V. mesenterica cranialis, of the common trunk of V. lienalis et V. colica sinistra and of the common trunk of V. colica dextra, V. colica media et V. gastroepiploica extra.

V. gastrica sinistra is about 15 mm long. It drains blood from the pylorus and the middle region of the stomach (V. gastrica sinistra parietalis et visceralis).

V. pancreaticoduodenalis cranialis is a short vein. It drains blood from the cranial part of the duodenum and from the right segment of the pancreas.

V. mesenterica cranialis is the largest vein which participates in the forming of the portal vein. It arises from the confluence of veins which drain blood from the caudal parts of the duodenum and the respective segment of the pancreas (V. pancreaticoduodenalis caudalis), from the jejunum (Truncus jejunalis and from the ileum, cecum and colon ascendens (V. ileocolica).

The common trunk of V. lienalis et V. colica sinistra is a short blood vessel comprising the portal vein. V. lienalis drains blood from the left part of the greater omentum (V. epiploica sinistra) left segment of the pancreas (rami pancreatici) and left part of the stomach (rami gastrici). V. colica sinistra receives the four branches which drain blood from the colon descendens.

The common trunk of V. colica dextra, V. colica media and V. gastroepiploica dextra drain blood from the colon ascendens (V. colica dextra), from the colon transversum (V. colica media) and from the right part of the greater omentum (V. gastroepiploica dextra).

Key words: Small green monkey, V. portae.

INTRODUCTION

The small green monkey (*Cercopithecus aethiops sabeus*) belongs to the superfamily of Cercopithecoidea or Catarrhini (Radovanović, 1965). It lives in

great groups in East Africa (Kenya, Uganda, Tanzania). This monkey is most frequently grey-green in colour except that the lower part of the neck, chest, abdomen and inner side of the arms are white.

The available literature offers very little information on veins in the small green monkey. Blagojević, (1989) described the heart and arteries, while Teofilovski (1982) presented the insulopercular region of the brain of the small green monkey. Stanojević et al. (1983) investigated the morphology of the male genital organs. This was the reason for these studies of the extrahepatic veins of the portal system in the small green monkey which were compared with the corresponding veins in the human (Sinelnicov, 1963, Rauber, 1955, Šljivić, 1952).

MATERIAL AND METHODS

The extrahepatic veins of the portal system were examined in 10 small green monkeys of both sexes, 3–4 years of age.

The blood vessels were investigated by two anatomical methods. The first consisted of dissection of the veins from animals previously sacrificed without bleeding. In the second one, gelatin stained with minium was injected into the portal vein, after bleeding from the abdominal aorta. The blood vessels were prepared and observed with the naked eye and a binocular magnifying glass.

RESULTS AND DISCUSSION

The portal vein (Figure 1) in the small green monkey lies in the portal fissure and partially in the dorsal part of the pancreas. Its length is about 30–35 mm. It is spiral-shaped with four enlargements. In the portal fissure V. portae gives off branches which enter into the liver lobes and further distribute intrahepatically.

The extrahepatic portal system of the small green monkey comprises five vessels: V. gastrica sinistra, V. pancreaticoduodenalis cranialis, V. mesenterica cranialis, the common trunk of V. lienalis and V. colica sinistra and the common trunk of V. colica dextra, V. colica media and V. gastroepiploica dextra. In the human (Šljivić, 1952., Sinelnicov, 1963.) the portal vein is comprised of three veins (V. mesenterica superior, V. splenica and V. mesenterica inferior).

V. gastrica sinistra (Figure 12) is about 15 mm long. It extends along the lesser curvature of the stomach. It originates from two veins. The first, V. gastrica sinistra parietalis, drains blood from the pylorus while the second, V. gastrica sinistra visceralis, drains blood from the middle region of the stomach. V. gastrica sinistra, in some cases can be associated with the common trunk of V. colica sinistra and V. lienalis.

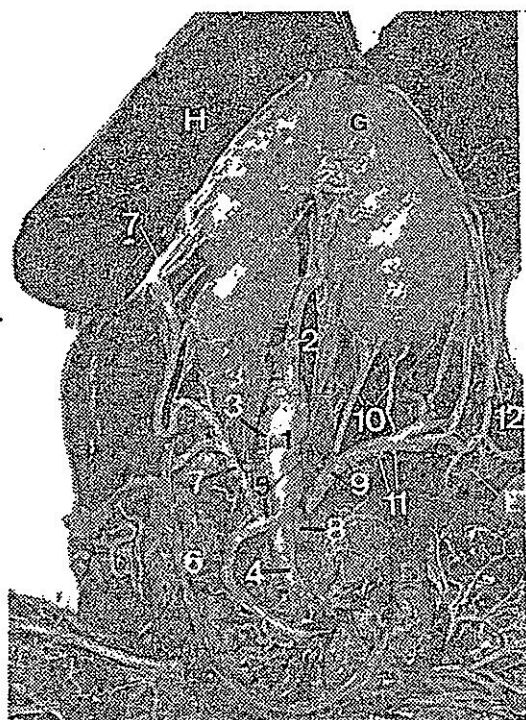


Figure 1. V. portae and its branches in the small green monkey
1—V. portae, 2—V. gastrica sinistra, 3—V. pancreaticoduodenalis cranialis, 4—V. mesenterica cranialis, 5—Common trunk of V. colica dextra, V. colica media et V. gastroepiploica dextra, 6—V. colica media, 7—V. gastroepiploica dextra, 8—V. colica sinistra, 9—V. lienalis, 10—Rami gastrici of V. lienalis, 11—Rami pancreatici 12—V. gastroepiploica sinistra, H—Hepar, G—Gaster, L—Lien



Figure 2. V. portae and its branches in the small green monkey
1—V. mesenterica cranialis, 2—V. colica dextra, 3—V. colica media, 4—V. gastroepiploica dextra, 5—V.v. jejunales, 6—V. ileocolica, 7—Ramus ilei, 8—Rami colici, 9—Rami cecales, J—Jejunum, C—Cecum, Co—Colon, H—Hepar

V. pancreaticoduodenalis cranialis (Figure 13) in the small green monkey is a thin and short branch of the portal vein. However, in the human V. pancreaticoduodenalis superior is a branch of the V. mesenterica superior. In the monkey V. pancreaticoduodenalis cranialis drains blood from the cranial part of the duodenum. It also receives Rami pancreatici which emerge from the right segment of the pancreas.

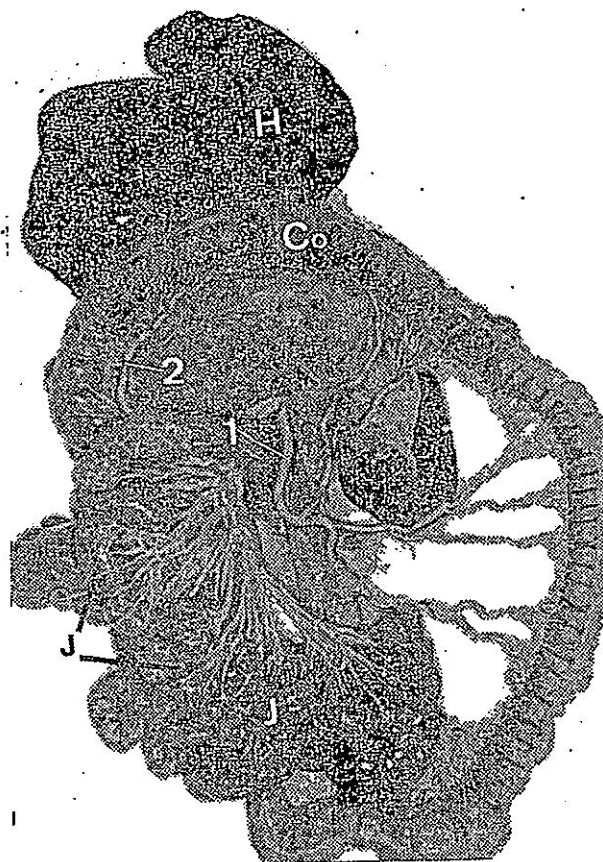


Figure 3. V. colica sinistra in the small green monkey
J—Jejunum, Co—Colon

V. mesenterica cranialis (Figure 14, 21) is the largest blood vessel which participates in forming the portal vein in the small green monkey. This vein arises from the confluence of three veins: V. pancreaticoduodenalis caudalis, Truncus jejunalis and V. ileocolica.

V. pancreaticoduodenalis caudalis takes its origin from the veins which drain blood from the caudal part of the duodenum and the respective segments of the pancreas. It anastomoses with the first jejunal vein. V. pancreaticoduodenalis inferior in the human (Šljivić, 1952.) differs from the small green monkey by draining blood from the pancreas into V. splenica.

Truncus jejunalis (Figure 25) in the small green monkey, like in the human, (Šljivić, 1952.) is most frequently comprised of six to seven jejunal veins. The first of the jejunal veins anastomoses with V. pancreaticoduodenalis caudalis

and the last of them with Ramus ilei of V. ileocolica. Truncus jejunalis drains blood from the jejunum.

V. ileocolica (Figure 26) in the small green monkey, as in the human (Šljivić, 1952.), is a branch of V. mesenterica cranialis. It is a short blood vessel, about 2 mm long. It arises from the confluence of the three branches: Ramus ilei, Rami colici and Rami cecales.

Ramus ilei (Figure 27) is the first branch of V. ileocolica which drains blood from the ileum. One of its branches anastomoses with the most caudal jejunal vein. In the human (Šljivić, 1952; Rauber, 1955.) several ileal veins drain blood from the ileum into V. mesenterica superior.

Rami colici (Figure 28) evacuates blood from the colon ascendens. It anastomoses in a circle-shape with V. colica dextra.

Rami cecales (Figure 29) are the largest branches of the V. ileocolica. They extend from the apex ceci towards Ostium ileocecale and both sides of the remaining cecum.

The common trunk of V. lienalis and V. colica sinistra

V. lienalis (Figure 19) extends towards the spleen passing through the pancreas. This vein receives V. gastroepiploica sinistra (Figure 17) which drains blood from the left part of the greater omentum. Rami pancreatici (Figure 1/11) evacuate blood from the left segment of the pancreas and Rami gastrici (Figure 1/10) from the left part of the stomach. V. splenica in the human

(Šljivić, 1952.) is not associated with V. colica sinistra in the small green monkey. It drains blood from the omentum majus (V. gastroepiploica sinistra), from the stomach (Vv. gastricae breves) and pancreas (Vv. pancreaticae) and then V. splenica leads blood most frequently into V. mesenterica inferior.

V. colica sinistra (Figure 18, 31) is a long vein, about 5–5, 5 cm in length. It extends through the left mesocolon. It originates from the confluence of four branches which drain blood from the colon descendens. The last branch of V. colica sinistra drains blood from the rectum too. In the small green monkey V. colica sinistra leads blood into the V. mesenterica caudalis.

The common trunk of V. colica dextra, V. colica media and V. gastroepiploica dextra (Figure 15) in the small green monkey drains blood into the portal vein, but in the human into V. mesenterica superior.

V. colica dextra (Figure 22) is comprised of many branches which evacuate blood from the colon ascendens. The smallest branch of V. colica dextra anastomoses with Ramus colicus of the V. ileocolica.

V. colica media (Figure 23) represents the union of three branches. The first of them anastomoses with V. colica sinistra. The second one is the largest branch and it receives many branches from the colon transversum. The third one reaches up to the right colon anastomosing with V. colica dextra.

V. gastroepiploica dextra (Figure 17) is most frequently a branch of the common trunk of V. colica dextra and V. colica media. This vein, in some cases is a branch of the portal vein. It extends towards the pylorus and duodenum. It is comprised of Rami gastrici which receive blood from the pyloric region of the stomach and Ramus colicus which drains blood from the colon ascendens.

Thus, the extrahepatic veins of the portal system in the small green monkey closely resemble the corresponding system in man with some important differences.

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EKSTRAHEPATIČNE VENE PORTALNOG KRVOTOKA MALOG ZELENOG MAJMUNA (*Cercopithecus aethiops sabeus*)

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

SADRŽAJ

U radu su proučavane ekstrahepatične vene portalnog krvotoka malog zelenog majmuna. Na osnovu proučavanja ustanovljeno je da Vena portae odvodi krv iz slezine, želuca, pankreasi svih creva sem rektuma. V. portae nastaje iz sliva pet vena: V. gastrica sinistra, V. pancreaticoduodenalis cranialis, V. mesenterica cranialis, zajedničkog stabla za V. lienalis i V. colica sinistra i zajedničkog stabla za V. colica dextra, V. colica media i V. gastroepiploica dextra.

V. gastrica sinistra odvodi krv iz pilorusnog i srednjeg dela želuca (V. gastrica sinistra parietalis et visceralis).

V. pancreaticoduodenalis cranialis odvodi krv iz kranijalnog dela duodenuma i desnog reznja pankreasa.

V. mesenterica cranialis nastaje iz sliva vena koje odvede krv iz kaudalnog dela duodenuma i odgovarajućeg reznja pankreasa (V. pancreaticoduodenalis caudalis), iz jejunuma (Truncus jejunalis) i iz slepog creva i Colon ascendens (V. ileocolica).

Zajedničko stablo za V. lienalis i V. colica sinistra je kratak krvni sud. Krv iz levog reznja pankreasa (Rami pancreatici), levog dela želuca (Rami gastrici) i levog dela Omentum majusa odvodi V. lienalis. Krv iz colona descendensa odvodi V. colica sinistra.

Zajedničko stablo za V. colica dextra, V. colica media i V. gastroepiploica dextra odvodi krv iz Colon ascendens (V. colica dextra), iz Colon transversum (V. colica media) iz desnog dela Omentum majus (V. gastroepiploica dextra).