



**A RARE CASE OF UNUSUAL GIANT GALLBLADDER IN A 24
YEARS OLD FEMALE RHESUS MONKEY (*MACACA MULATTA*)**

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<p>Article Info Received 20/08/2015 Revised 27/08/2015 Accepted 03/09/2015</p> <p>Key words: Giant gallbladder; Gallbladder disease; Adult female <i>Macaca mulatta</i>.</p>	<p>ABSTRACT Giant gallbladder was observed in a 24-year-old female rhesus monkey. In such case, the unusual gallbladder had approximately 92 mm × 64 mm × 42 mm; the yellow-green turbid liquid volume of the giant gallbladder was about 65.4ml. To the best of authors’ knowledge, this is the first case reported of giant gallbladder in nonhuman primates.</p>
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INTRODUCTION

It is very difficult to find a monkey has a giant gallbladder in the breeding colony. No case reported in literature of giant gallbladder was seen in nonhuman primates. We could find only seldom cases in human being [1-3]. The average volume of a normal gallbladder in the adult female rhesus monkey is about 6-10 ml. In such case, the gallbladder has lost its usual outlines and has acquired a balloon-shaped form; the yellow-green turbid liquid volume of the giant gallbladder was about 65.4ml. To the best of the authors’ knowledge, this is first report of giant gallbladder in monkeys till now. In this study, researchers present an unusual giant gallbladder in a 24 years old female rhesus monkey.

CASE PRESENTATION

A twenty-four-year-old female rhesus monkey was presented in this case report. The rhesus monkey colony population had 825 animals (235 male and 590 female) during the 4-year period in Kunming Biomed International (KBI). Rhesus monkeys were housed in 20 shielding houses. Averaged breed approximately 41 animals per house. All the animals were fed twice a day

with commercial monkey chew (crude protein 21.5%, and crude fat 6.8%), supplemented with fresh fruits and vegetables once a day. Monkeys were given free access to tap water, supplied by an automatic watering system. The animal facility of KBI is accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC).

One afternoon, we found one female monkey was anorexia, tired state, lackluster fur and fleshless. Fed the monkey in single stainless steel cage indoor, and provided the monkey with digestible and well-fed food. The next morning, we found the monkey died in the cage, and necropsied the monkey in accordance with standard procedures.

The gallbladder was found to be extremely enlarged, coming from under the right lobe of the liver (Fig. 1). Liver lobe closed to the gallbladder wall. There were a lot of blood in abdominal cavity and then found the right kidney was ruptured, The unusual gallbladder had approximately 92 mm × 64 mm × 42 mm, the yellow-green turbid liquid volume of the giant gallbladder was about 65.4ml.



Gallbladder wall was thickened markedly, there was a large number of hyperplastic fibrosis inside gallbladder, but didn't find stones (Fig.2), biliary duct was blocked by the numerous fibrosis substance.

No obvious pathological changes of the spleen, heart, lung and kidney were observed, only found moderate

steatosis in liver by haematoxylin and eosin, and gallbladder wall by pathological detection had a large number of inflammatory cells microscopically, the pathological features was typical chronic cholecystitis.

Fig 1. Gross observation of giant gallbladder

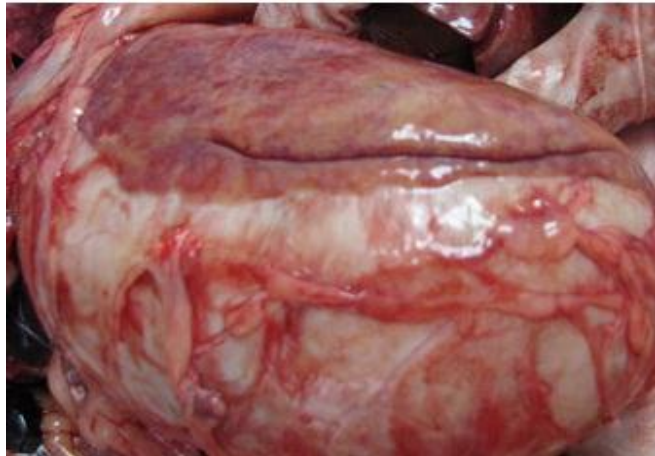
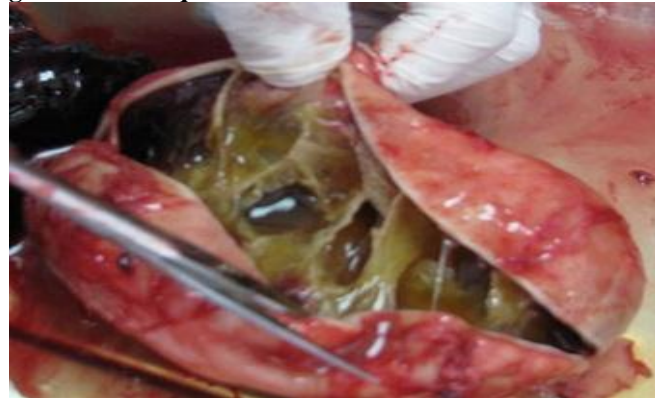


Fig 2. Gallbladder was cut open; Thickened gallbladder wall, a large number of hyperplastic fibrosis and yellow-green turbid liquid were observed



DISCUSSION

To the best of the authors' knowledge, no case reported of the giant gallbladder in nonhuman primates. In this case, the unusual gallbladder had approximately 92 mm × 64 mm × 42 mm, and the yellow-green turbid liquid volume of the giant gallbladder was about 65.4ml. We consider the gallbladder is "giant", the volume of the giant gallbladder exceeds 10 times of normal gallbladder in the adult female rhesus monkey.

There must be exclusively favorable conditions for a gallbladder to become extremely giant gallbladder hydrops, usually extrahepatic bile duct or gall bladder neck was obstructed by calculus or tumor that cause bile excretion poorly to form a giant gall bladder hydrops. But in this case, significant clinical manifestations that bacterial contamination of the bile in the gallbladder should be a main reason, long-term development leads to consequences that cystic duct is blocked by the numerous fibrosis substances. Cholestasis causes chronic inflammation of the gallbladder, gallbladder wall thickening, a large number of fibrosis proliferators inside gallbladder, and the gallbladder loses contraction function slowly. The gallbladder continues to enlarge. Gallbladder pressures surrounding organs, causing right kidney ruptured, and a large amount of blood loss leads to the death of monkey.

REFERENCES

1. Panaro F, Chastaing L, Navarro F. (2012). Hepatobiliary and pancreatic: Giant gall-bladder associated with Byler's disease. *Journal of Gastroenterol Hepatol*, 27(3), 620.
2. Zong L, et al. (2013). A case of congenital giant gallbladder with massive hydrops mimicking celiac cyst. *Oncology Letters*, 5(1), 226-228.
3. Kuznetsov AV, et al. (2014). Giant gallbladder: A case report and review of literature. *International journal of surgery case reports*, 5, 673-676.

CONCLUSION

To the best of authors' knowledge, this is the first case report of giant gallbladder in nonhuman primates. From clinical pathological feature that bacterial contamination of the bile in the gallbladder should be a main reason. Long-term development leads to consequences that cystic duct is blocked by the numerous fibrosis substances; the gallbladder continues to enlarge to form a giant gallbladder.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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