

## Case Report

# A case of patent ductus arteriosus in a holstein calf

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**This report describes a case of patent ductus arteriosus (PDA) which was found in a calf during an experiment on an implantable ventricular assist device. This is the first case report of PDA confirmed in the calf in Korea.**

**Key words:** Patent ductus arteriosus, PDA, calf

Although many congenital cardiovascular abnormalities have been found in cattle [5,6], patent ductus arteriosus (PDA) in calves has been infrequently reported. We present a case of PDA, found incidentally in a calf during an experiment on an implantable ventricular assist device. It is believed to be the first confirmed report of PDA in the calf in this country.

The subject was a three-month old male Holstein calf weighing 80 kg, which was brought to an animal research facility of Seoul National University Hospital for the experiment. The animal showed no particular abnormal findings during one-week preoperative observation period. On physical examination, the conjunctival and oral membranes were neither pale nor cyanotic. No significant hematological abnormalities were detected (Table 1). The calf was not examined on the heart any more before the operation, because we did not expect to meet the calf with PDA, incidentally.

During the operation, a PDA with a diameter of 0.7 cm and 1.5 cm in length was found, adjoining the descending aorta and the pulmonary artery (Fig. 1). A typical continuous machinery thrill was detected over the PDA. The PDA was doubly ligated with 1-0 silk.

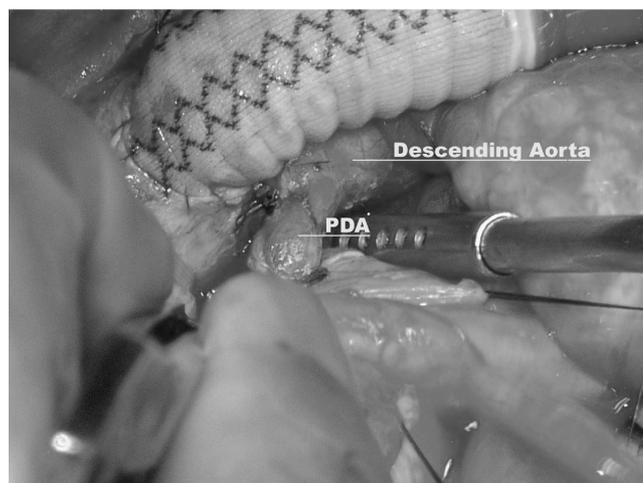
Little is known of the cause of cardiac defects. Hereditary factors have been suggested for some types of cardiac defects in cattle, dogs, sheep, and human beings. Holstein cattle may have a predisposition toward congenital cardiac defects [1].

PDA is a common cardiovascular abnormality in dogs but

infrequent in other species [3]. Wiseman and Murray [7] described the first case of uncomplicated PDA in the bovine. Sandusky and Smith [5] found two cases of PDA in a series

**Table 1.** Hematological findings in the calf before implantation of ventricular assist device during the experiment

Parameters	Values
WBC ( $\times 10^3/\mu\text{L}$ )	6.31
RBC ( $\times 10^6/\mu\text{L}$ )	7.99
Hb (g/dL)	9.5
Hct (%)	28.9
MCV (fL)	36.2
MCH (pg)	11.9
MCHC (g/dL)	32.9
Platelet ( $\times 10^3$ )	438
Seg. Neut. (%)	70.7
Lymphocyte (%)	13.3
Monocyte (%)	12.4
Eosinophil (%)	2.5
Basophil (%)	1.1



**Fig. 1.** Patent ductus arteriosus (PDA) with a diameter of 0.7 cm and 1.5 cm in length adjoining the descending aorta and pulmonary artery.

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of 1000 autopsies on calves and cattle, while Gopal and others [1] in a 14-year study of calves with cardiac defects, found five with PDA in a series of 36 calves with cardiac defects.

The clinical presentations of cases of PDA described in cattle have included recumbency from birth and death at one week old [5], ascites, cyanosis and death at six days old [6], tachypnea and death at 10 days old and sudden death without prior warning at 18 days old [2]. In adult cattle, reported PDA showed poor growth rate since birth and poor body condition, but bright and alert with a good appetite [4], and thrombosis resulting from the turbulent blood through PDA [3].

This paper suggested that PDA is not rare but rarely recognized in calves in our country. We suppose that veterinary clinicians in Korea will need to take into Horton and others [2] view that the respiratory distress of calves with PDA might easily have been misdiagnosed as pneumonia and in most cases a post mortem examination would not have been carried out.

We present the first case of PDA confirmed in a calf in Korea.

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