Surgical Resection of a Subepiglottic Cyst with an Oral Flexible Endoscope in a Young Thoroughbred Horse

Seiji HOBO*, Atsutoshi KUWANO†, Masa-aki OIKAWA‡, Yasuhiro UEYAMA**, and Masahiko NITTA***

†Equine Research Institute, Japan Racing Association, 5–27–7 Tsurumaki, Setagaya-ku, Tokyo 154, and **Ritto Training Center, Japan Racing Association, 1028 Misono, Ritto-cho, Kurita-gun, Shiga 520–30, Japan

A subepiglottic cyst, found in a young thoroughbred horse which showed respiratory noise during exercise, was resected by means of a wire snare fed with high current while viewing under oral endoscopy. In comparison with the laryngotomy and pharyngotomy approaches reported elsewhere in the literature, the present method proved to be safer, inflicted less surgical stress, and required a shorter recovery period. The histopathological study did not clarify the tissue origin but the location of the cyst suggested it to be derived from the thyroglossal duct.

Key words: electrosurgery, endoscopy, horse, subepiglottic cyst

Equine pharyngeal cysts are rounded structures that form in the retrolingual region at the entrance of the pharynx, and are categorized as subepiglottic, dorsal pharyngeal, or soft palate cysts, depending on where they arise [5, 8]. These cysts are believed to be derived from either the embryologic remnants of the thyroglossal or craniopharyngeal ducts, or from dilation of the mucous gland [7, 8, 11]. Pharyngeal cyst produces an abnormal respiratory noise which is heard on inspiration and expiration during exercise. Surgical resection of such cysts by ventral midline laryngotomy or pharyngotomy has been reported as an effective cure in horses [5, 6, 8, 11], but these methods have a major disadvantage in that they cause surgical stress because of tissue damage, bleeding due to the deep incisions that are required, and also require long recovery periods before the horses can resume a normal work routine [6, 8, 11].

This paper describes the successful resection of a subepiglottic cyst in a race horse by means of oral endoscopy. The method presented was found to be safer, inflicted less surgical stress, and required a shorter recovery period than the methods currently used.

The horse examined was a 430-kg male thoroughbred. It was reared in the Hidaka region of Hokkaido, Japan, until it reached 28 months of age, and then began training as a race horse at the Ritto Training Center (one of the training facilities belonging to the Japan Racing Association).

The horse underwent a normal training regime for 2 months, then it suddenly developed noisy respiration which differed markedly from the whistling associated with laryngeal hemiplegia. In addition to the noises, coughing and a lowered tolerance for exercise were noted.

An oral endoscopic examination was performed on the laryngo-pharynx with a flexible endoscope (VIDEOOSCOPE, GIF TYPE XQ 200, OLYMPUS, Tokyo). A semi-rounded, faintly reddish-pink mass, elevated from the base of the epiglottis, was observed (Fig. 1). Latero-medial radiography showed a distinct rounded shadow projecting from the base of the epiglottis into the oral cavity as well as into the underlying tissue. Aspiration of the mass with a puncture needle fed through one channel of the flexible endoscope revealed that the mass was a highly elastic, cystic structure, partly filled with thin yellowish fluid. Aerobic and...
anaerobic cultures on the aspirated fluid were performed according to the methods described by Kamada et al. [3, 4]. No microorganisms were isolated from the fluid. Many keratinized epithelial cells, and a few lymphocytes were observed in centrifugal smears of the fluid.

Resection of the cyst was carried out in the following manner. After intravenous sedation with xylazine (CELACTAL®, BAYER, Tokyo) 0.8 mg/kg, the horse was anesthetized with a ketamine (KETALAR® 50, SANKYO, Tokyo) 2.5 mg/kg and 10% guaiacolglycerol ether solution (GGE 10%, FUJITA, Tokyo) 500 ml given intravenously, and placed in a left lateral recumbent position with the head and neck extended. Anesthesia was maintained with a drip-infused mixture of 10% guaiacolglycerol ether solution (500 ml), xylazine (500 mg) and ketamine (2,000 mg) supplied at a rate of 1.1 to 1.4 ml/kg per hour. Next, a flexible endoscope was passed through the oral cavity to the area of the cyst. A snare was fed through one channel of the endoscope, and the loop of the snare was placed over the cyst, and positioned closely around its base. Once the cyst had been ensnared, a 100-W monopolar current was fed through the snare, thereby removing the cyst, and simultaneously cauterizing the wound (Fig. 2).

During the surgical operation, the horse respired spontaneously, and endotracheal intubation was not performed.

Following the surgery, gentamicin (GENTAMIN®, NIHON ZENYAKU, Fukushima) 2.5 mg/kg, i.m. and diclofenac sodium (VOLTAREN® Tab, CIBA-GEIGY, Hyogo) 1.0 mg/kg, P.O. were administered, and iodine glycerin compound (COMPOUND IODINE GLYCERIN®, MARUISHI, Osaka) 20 ml was smeared on the wound twice a day. This treatment was continued for 3 days, at which point the wound had healed. During the 4 days after the operation, no surgical abnormalities or complications were observed, and therefore from the fifth day, walking was allowed. From the 10th postoperative day, the horse was permitted to be ridden, and normal training was resumed. No abnormality has since been observed.

Histopathologically, the cyst was lined mainly by columnar epithelium mixed with goblet cells, partly combined with stratified squamous epithelium or squamous metaplasia, and surrounded by relatively thick connective tissue (Fig. 3).

It has been reported that pharyngeal cysts seen in young horses slowly enlarge with time, thereby causing gradual onset of airway obstruction [5]. In contrast with these previous reports, the present case of pharyngeal cyst appeared to have developed suddenly, as the horse had displayed no previous symptoms. Since the cyst wall consisted of
relatively thick connective tissue, and the epithelial cells lining the cyst showed signs of squamous metaplasia, the cyst might have existed subclinically prior to the onset of the observed symptoms. Cysts of the cranial region of the neck may be of thyroglossal duct origin or branchiogenic origin [7]. The former (thyroglossal duct cysts) occurring at the root of the tongue are smooth-walled cysts lined by stratified squamous epithelium or respiratory epithelium with intense subepithelial lymphoid infiltrate. Thyroid follicular cells may be seen when the cyst occurs at the lower neck [1, 2, 7, 9]. The latter (branchial cleft cysts) are most frequently located lateral to the thyroid region and are usually lined by squamous epithelium sometimes with focal areas of pseudostratified columnar respiratory epithelium. Subepithelial aggregates of lymphoid tissue are frequently present [1, 2, 7, 9]. It is difficult to conclude whether the cyst is derived from thyroglossal duct origin or branchiogenic origin from the histological appearance of the lesion. Nevertheless, as the cyst was located near the base of the tongue and almost midline of the neck, we presumed that the present cyst is so-called subepiglottic cyst, probably derived from a thyroglossal duct [2, 7–11].

It has been reported that a surgical approach is best made through ventral midline laryngotomy or pharyngotomy [5, 6, 8, 11]. However, the method outlined in this paper has the following advantages over these techniques: the recovery time required until moderate exercise can be allowed is much shorter than that after laryngotomy or pharyngotomy, and there is very little tissue damage, which results in an uncomplicated, rapid, and successful resection of the cyst, carried out under direct observation and manipulation through an endoscope.

References