Clinical Report on Diagnosis and Treatment

of Aspiration pneumonia of a Cat.

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ABSTRACT

The present case study was to diagnose aspiration pneumonia on the basis of clinical history, clinical sign and x-ray findings at Purbachal Teaching and Training Pet Hospital and Research Centre of Chattogram Veterinary and Animal Sciences University, Chattogram, Bangladesh at 3rd march, 2020. A 6 month old Parsian cat was brought to the hospital by his owner. The owner's complain was unsatisfactory feeding for last 48 hours with abnormal respiratory sound, difficulty in breathing, runny nose, fowl odor from mouth, lacrimation. Coughing was also found. Through clinical examination, rectal temperature was found 103°F and wheezing sound was found from lung after auscultation. A presumptive diagnosis was made on the basis of the history of forceful bottle feeding. Through X-ray of chest, pneumonic change in lung was found. The cat was treated with an antibiotic, bronchodilator, corticosteroid. All drugs were administered for five days. After administrating these drugs, the cat started to recover. Finally during follow up, the cat was found fully recovered.

Key word: Aspiration pneumonia, Parsian cat.

Chapter I: INTRODUCTION

Aspiration pneumonia is a pulmonary infection characterized by inflammation and necrosis due to inhalation of foreign material **(Scott, 2014).** Several pulmonary syndromes may occur after aspiration of foreign substances and it depending on the amount and nature of the aspirated material, the frequency of aspiration and the host's response to the aspirated material **(Marik, 2001).** However, some problems are responsible for occurring aspiration pneumonia. They are dysphagia, a reduce level of consciousness, periodontal disease and mechanical interference that is related to the insertion of various tube into respiratory or gastrointestinal tracts **(Sydney, 1991).** The most common cause of aspiration Pneumonia in case of animal is faulty administration or improper drenching technique of medicine by inexperienced persons. To prevent aspiration pneumonia, Liquids given by drench or dose syringe should not be deliver faster than the animal can swallow. Drenching is particularly dangerous when the animal's tongue is drawn out, when the head is held high, or when the animal is coughing or bellowing **(Scott,2014).**

Aspiration pneumonia is unfortunately frequent occurrence in veterinary patients and is recognized a far more commonly in dogs than in cats **(Lftin,2011**). The causes of aspiration pneumonia in cat can be persistent vomiting, force feeding, or improperly administered medications. It may also occur after suckling in a newborn with a cleft palate **(F. Kuehn N,2018).** So aspiration pneumonia is a concern for young orphan kittens, as it occurs when kittens inhale formula into the lungs during bottle feeding. When a cat has inhaled foreign matter into its lungs-for example ,a tiny piece of plastic or a seed pod. Such object are bound to irritate the sensitive tissues of lining of lung or a cat may vomit and in the process, inhale some of its stomach contents, which tend to be very acidic and will also irritate the tissues. The vomited material may contain bacteria from the small intestine, which can cause a secondary infection in the lung tissues.

Although all bread of cats are susceptible to pneumonia, those with Brachycephalic (flat faced) features, such as Persians, Ragdolls ,Himalayans, are more likely to experience upper respiratory tract infection, which may put them at risk for respiratory complications such as pneumonia .Brachy means shortened and cephalic means head. Therefore, the skull bones of brachycephalic cats are shortened in length, giving the face and nose a phused in appearance. Due to shorter bones of the face and nose, the anatomy and relationships with other soft tissue structures are altered, some of these changes may cause physical problems, Particularly in breathing (**Williams, 2018**). When the feed or drink goes down the wrong way, pneumonia can be developed. If bacteria present in aspirated material, it become responsible to initiate acute infection or secondary infection later in disease (Scott, 2014). Although aspiration of foreign substances into the lung may, or may not, involve bacterial infection (**Shakespear, 2012**). The pathogenesis of pneumonia begins with the colonization of the oropharyngeal surfaces by potential respiratory pathogens. The adhesion of bacteria to these surfaces is usually mediated by specialized bacterial surface structures, which bind to specific receptors on the host surface. Oral bacteria are potent stimulators of cytokine production from oral epithelial cells and those may also modulate the adhesion of respiratory pathogens to respiratory epithelial cells (**Scannapieco et al., 2001**). Oral bacterial products or cytokines in oral/pharyngeal aspirates have two kinds of function; one is stimulating cytokine production from oral/respiratory epithelial cells, and the other is modulating the adhesion of respiratory epithelial cells. Then, epithelial cells also alter expression of various cell adhesion molecules on their surface in response to cytokine stimulation. Variation in expression of such adhesion molecules may alter the interaction of bacterial pathogens on the mucosal surface (**Yumoto et al., 1999**). Once aspirated into the lower airway, the bacteria adhere to the bronchial or alveolar epithelium, again via specific adhesion–receptor interactions, which include lectin as well as protein-protein interactions for glycoproteins and glucolipids **(Svanborg et al., 1996).** Epithelial cell destruction by adhered bacteria may be due to the direct effect of bacterial products on membrane permeability. Wilson et al. have demonstrated that bronchial secretions may also contain bacterial toxins, which can cause epithelial necrosis and disrupt ciliary ultrastructure. One of the main functions of the airway epithelium is to inactivate and remove infectious particles from inhaled air and thereby prevent infection of the distal lung (**Morrison 1986**).

Symptoms which are found in aspiration pneumonia are dyspnea, dysphasia, fever, coughing, runny nose, tachypnea, tachycardia, vomition, regurgitation, loss of appetite, exercise intolerance and lethargy (**Marik,2011**).

The study was performed in Teaching and Training Pet Hospital and Research Center of CVASU, Purbachol where a cat was came with abnormal respiratory sound. The study was designed with following objectives:

1. To show the diagnostic procedure of aspiration pneumonia in a cat.
2. To make a therapeutic approch to treat the aspiration pneumonia in a cat.

Chapter II: CASE PRESENTATION

2.1. CASE HISTRY AND CLINICAL EVALUATION:

A 6 month old Parsian Tomcat named Mr. PeaBuddy was presented to Teaching and Training Pet Hospital and Research Center of CVASU with the history of forceful administration of liquid feed. After that, the cat become dull, anorectic. After one day, the owner found frequent coughing in the cat and showing abnormal respiratory sound. At the time of arrival to the hospital patient was so much depressed and showed severe breathing difficulty. Rectal temperature was found 103°F. After auscultation, dyspnea, tachypnea and wheezing sound from lung was found. Heart rate was 160 beat per minute. Feces and urine was normal. The animal was lack of any foot lesion or mouth lesion. The body condition was fair. No skin lesion was found and the fur condition was good.

2.2. DIAGNOSIS PROCDURE FOLLOWED IN THIS CASE:

At first, a presumptive diagnosis of aspiration pneumonia was made on the basis of clinical history, clinical signs and clinical finding like abnormal sound from lung during auscultation. After that, Radiological examination of thoracic region was conducted to find if there was any abnormality was found or not. It revealed clowdy shadow area all over the lung which indicates presence of mucous, filling the alveolar space. It was representing the pneumonic condition. This radiographic imaging helps to make confirmatory diagnosis.

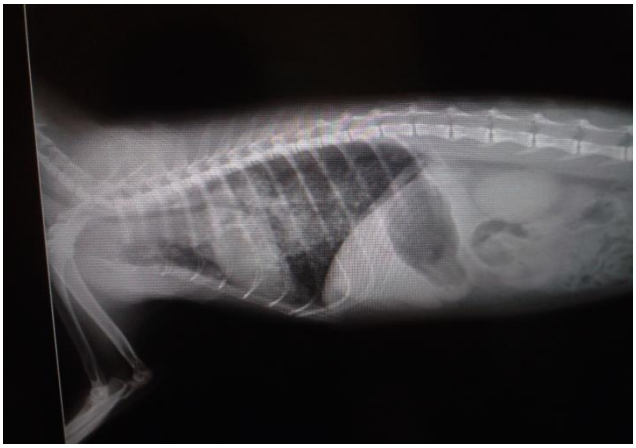

Fig: X-ray finding of the cat before treatment

Chapter III : TREATMENT

Immediately after diagnosis, aminophyline which is a bronchodilator was administered. It helps to relax muscles in lung and chest to allow more air in, decrease the sensitivity of the lungs to allergens and other substances that cause inflammation, and increases the contraction of diaphragm to draw more air into the lung. when a cat is known to have inhaled a foreign substance, broad-spectrum antibiotics are usually prescribed without waiting for signs of pneumonia to appear. So, a broad spectrum antibiotic**,** Ceftriaxon, was administered to check the primary and secondary bacterial infection. A corticosteroid, Dexamethason was also prescribed as Corticosteroid might reduce pulmonary inflammation in severe pneumonia, preventing respiratory failure. The owner was advised to administer these drugs for five days. After full course of drug administration, the cat was starting to recover. Another radiographic image was taken after full course of drug administration. That show no pathological change in lung.

Chapter IV : DISCUSSIONS

Aspiration pneumonia is unfortunately frequent occurrence in veterinary patients and is recognized a far more commonly in dogs than in cats. The causes of Aspiration pneumonia in cat can be persistent vomiting, force feeding, or improperly administered medications. It may also occur after suckling in a newborn with a cleft palate **(F. Kuehn N,2018**). In this case, the cat was aspirated a little amount of liquid feed. After that, the cat started to show the sign symptoms. Important sign included, pyrexia 103°–105°F, arched back, inappetance, depression, toxic mucous membranes, runny nose, vomition, regurgitation, exercise intolerance, lethargy and an increased respiratory rate with a shallow abdominal component. Through clinical history and clinical sign, a presumptive diagnosis of aspiration pneumonia can be made.

To do confirmatory diagnosis radiographic image was taken. Radiographic evidence of aspiration pneumonia depends on the position of the patient when the aspiration occurred **(Gamache,2018**). The right middle lung lobe is the most frequently affected, although the cranial lung lobes are also commonly implicated. When aspiration is suspected, it may be helpful to obtain a left lateral radiograph as this will increase the ability to detect right-sided infiltrates (**Loftin,2011**). In this case left lateral radiograph was taken and found pneumonic lesion.

Postmortem can be the another way of confirmatory diagnosis of aspiration pneumonia. In case of aspiration pneumonia, the postmortem finding will be, markedly congested lung with areas of interlobular edema. Hyperemic bronchi will be found with full of froth. Suppuration and necrosis will also be followed. The foci will become soft or liquefied, reddish brown, and foul smelling. There usually is an acute fibrinous pleuritis, often with pleural exudate **(Scott,2014**). But as the cat in this case was alive, postmortem could not be done.

A complete blood count (CBC) and chemistry panel are recommended in patients with aspiration pneumonia, but findings are often non-specific (**Loftin,2011**). So in this case, CBC was not recommended.

Due to inhalation of foreign particles, a hypersensitivity response triggers bronchospasm which causes tachypnea. To check this, a bronchodilator was used and it responded well (**Schulze and Rahilly 2012).** In this case the cat showed an improvement in first 5 days in respiratory rate due to administration of bronchodilator and corticosteroid therapy. A corticosteroid, dexamethasone was used, as this drug is used for the treatment of aspiration pneumonia, limits the over-exuberant inflammatory response in aspiration pneumonia, reduce temperature and also because it's euphoric effect would help to stimulate apatite (**Roberson 1985).**

When a cat is known to have inhaled a foreign substance, broad-spectrum antibiotics are usually prescribed without waiting for the sign of pneumonia to appear (**Ned F. Kuehn**,**2018**). Because, bacteria residing in the oral and nasal cavities and Gram positive bacteria are responsible to do secondary infection. To prevent the bacterial infection, a broad spectrum antibiotic "ceftriaxon" was administered in this case.

In case of pneumonia, fluid loss through the respiratory tract is increased due to panting, tachypnea and increased mucous production (**Schulze and Rahilly 2012).** But, the cat in this case was not that much dehydrated. So fluid therapy was not administered in this case.

The treatment showed overall improvement of the patient. And the patient was discharged after 7 days.

LIMITATION

It will be helpful if the cat re-examined frequently to watch the improvement or recurrence or to detect any possible complication. It became possible if the hospital provided the facility of impatient care. CS test was also needed to detect specific antibiotics which will help to check the antibiotic resistance problem.

CONCLUSION

Aspiration Pneumonia in cat can be caused by forcefully bottle feeding. Common clinical signs are fever, tachypnea an increased heart rate, dyspnea, exercise intolerance, dehydration, abnormal breathing sound, loss of appetite, lethargy etc. Most commonly used drugs are, broad spectrum antibiotic like ceftriaxon, bronchodilaor like aminophylline and corticosteroidal drug.

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Biography

I am Sumia Bin-Te kawser, daughter of late. Nurul Alam and Salma Alam. I passed Secondary School Certificate examination in 2012 (GPA 5.00) from Pabna Govt. Girls High School, followed by Higher Secondary Certificate examination in 2014 (GPA 5.00) from Pabna woman College. Now I am an intern veterinarian under the Faculty of Veterinary Medicine in Chattogram Veterinary and Animal Sciences University. In the future I would like to work as a veterinary practitioner.