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Deflation treatment of sub-cutaneous emphysema in a blue rock pigeon (*Columba livia*)

Deeptimayee Pattanayak, K Senthilkumar, Mohamed Shafiuzama and M Palanivelrajan

Abstract

Subcutaneous emphysema is known as a disorder caused by air escaping from the respiratory system (air sacs, lungs and trachea) and the air accumulated and trapped under the skin and subcutaneous tissue. A male blue rock pigeon weighing 250g of one year age presented to Avian and Exotic Pet Unit (AEPU), Madras Veterinary college, TANUVAS with a history of dullness, anorexia, swelling of neck and thoracic region, difficulty in swallowing and breathing for fifteen days. There was no history of any previous treatment. On physical examination the trapped gas could be felt and it was diagnosed to be a case of Sub-cutaneous emphysema of unknown etiology. A 20 G hypodermic needle was introduced gently to the inflated area as a means to reduce the buildup of air under the skin of chronic avian subcutaneous emphysema and the gas was aspirated completely to bring the bird to normal appearance. Needle punch was done over several areas of the skin for considerable reduction of trapped air volume. The cannula was fixed as such for a week to prevent further accumulation of gas. The area was dressed with povidone iodine. Medical management was done with oral administration of Enrofloxacin @15mg/kg to prevent secondary bacterial infection for three days. The bird recovered eventually with no evidence of subcutaneous emphysema.

Keywords: Pigeon, sub-cutaneous emphysema, deflation treatment, windpuff

Introduction

Subcutaneous emphysema which is sometimes called as windpuff is one of the most common clinical conditions observed in birds. Two factors are concerned in the etiology i.e. the presence of gas under pressure in the lumen of the respiratory tract may itself produce the trauma and spread in the underlying connective tissue. Laceration of the mucosa permits gases in the lumen of the respiratory tract may itself produce the trauma and spread in the connective tissue (Ozinsky, 1955) ^[8]. However, it may also be induced by a number of etiologic causes including infections, malnutrition or parasitic infestation (Płóciennik *et al.*, 2023) ^[9]. Similar condition of windpuff is mostly recorded in poultry and companion birds (Gornatti-Churria *et al.*, 2018) ^[3]. Here, we present a rare case of subcutaneous emphysema observed in a blue rock pigeon.

Case History and Clinical Observations

A male pigeon weighing 250 g of one year age presented to Avian and Exotic Pet Unit (AEPU), Madras Veterinary College, TANUVAS with a history of dullness, anorexia, swelling of neck and thoracic region (Fig. 1). On observation of the bird the difficulty in swallowing and breathing difficulty noticed and owner had also reported the same for fifteen days. There was no history of any previous treatment. No sign of wound and laceration was observed. On physical examination the trapped gas could be felt and it was diagnosed to be a case of subcutaneous emphysema of unknown etiology. These findings were in agree with results of other authors. Radiographic investigation (Fig. 2) was performed in order to rule out any anatomical modification in relation with under skin gas accumulation. Radiographic features showed large radio-transparent zones in the breast area (Kaboudi, 2019) ^[4]. No bone fracture or lung damage was found. The pigeon was examined thoroughly to ensure the absence of lice in the naked eye to rule out parasitological etiology. It was observed microscopically also that there was no evidence of lice infestation.

Treatment

For relive of the gas the sterile 20 G hypodermic needle was introduced gently to the inflated area and the gas was aspirated completely to bring the bird to normal appearance. A sterile 20 G Hypodermic needle was used to puncture (Fig.3) several areas of the skin in the breast area until considerable reduction of gas volume was evident. The cannula was fixed as such for a week to prevent further accumulation of gas (Fig.4). The area was dressed with povidone iodine and medical management was done with oral administration of Enrofloxacin @15mg/kg to prevent secondary bacterial infection for three days. The bird recovered eventually with no evidence of subcutaneous emphysema after 15 days.

Discussion

Subcutaneous emphysema is a common clinical incidence in case of poultry birds and pigeons. This condition also occurs when air is pumped into the subcutaneous tissues through a skin wound or as the result of damage to part of respiratory system (Saif *et al.*, 2003) ^[10]. Subcutaneous emphysema may be a result of ruptured air sacs, which usually occurs after accidents, e.g. collisions with glass window pane (Maina, 2022) ^[6]. Subcutaneous emphysema also occurs when air is pumped into the surrounding tissues by the tongue and other muscular movements associated with swallowing, from a wound caused by something sharp in the pharynx or the throat (Devarathnam and Naveen, 2013) ^[12]. The pigeon is a fast runner bird and the movement of tongue during running predisposes the bird for subcutaneous emphysema. Mirsolav and Nelly (1950) stated that the gas forming bacteria multiplying in a deep and airless wound can predispose the condition also. So, the escaped air is accumulated and trapped under the subcutaneous tissue, diffuses down the neck and produces a puffiness of the weight and pallor of the skin as subcutaneous emphysema (Saif *et al.*, 2003) ^[10]. Puncture wounds and cuts involving layers of skin and muscles do not stay immediately opposite one another, since the layers slide over each other during movement. If the surface layer is concave and its elasticity allows to lift and then the air is drawn in. The air is then trapped and is pushed on the easiest course, which is along the planes between skin and muscle or between the layers of muscle. Kamani *et al.* (2009) ^[5] stated that accumulated air can be successfully treated by puncture with hypodermic needle and antibiotic treatment. The air was evacuated from the breast region by following the method adopted by Tanjim *et al.*, (2023) ^[13]. The etiology of the condition was due to parasitic invasion. Besides this, many researchers have been reported this case with unknown etiology (Sankar and Mohammed, 2015, Choudhury, 2020 & Kaboudi, 2019) ^[11, 1, 4].

Conclusion

This paper describes clinical and therapeutic approach of a rare condition of subcutaneous emphysema in a blue rock pigeon. A ballooning of overall body was detected and differentiated from subcutaneous edema radiographically. The etiology of this emphysema was unknown in the absence of obvious causes.

Conflict of Interest

Not available

Financial Support

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Fig 1: Subcutaneous emphysema in blue-rock pigeon (Before treatment)



Fig 2: Radiographic examination showed a large radio-transparent zones under the skin



Fig 3: Application of punctures in several zones with sterile hypodermic needle to evacuate the subcutaneous gas



Fig 4: Fixation of canula to prevent further occurrence of the condition.

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