

Literature Review on the Atherosclerosis in Pigeons

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ABSTRACT

In the meat group of pigeons, white carneau is responsible to heart-related disease atherosclerosis. Adequate published and online data on carneau pigeons (Plate 1) and show racer homer pigeons (Plate 2) explained this cardiac incident. Results suggested that both male and female white carneau pigeons from 1 to 13 years of age (3-4 years are vulnerable) exhibited atherosclerosis which is similar to human, so this bird can be a model to do more studies for human welfare. Highly rich feed at the time of intensive rearing and their age could lead this heart-related problem.

Keywords: Carneau Pigeon, Racer Homer Pigeon, Meat-Breeds, Atherosclerosis, Plaque, Feed.

INTRODUCTION

From history or from several studies on the present context, pigeons are such bird species that are found huge with their numerous varieties as a pet or commercial or research bird in the world. Many famous people in the world kept pigeons as their own or family-related tradition. In 1874, the first angioplasty surgery of the aortic wall was performed in birds. Spontaneous (non-induced) atherosclerosis in the chicken was first described in 1914 [1], and it has been repeatedly observed that avian lesions bear close resemblance to their human counterparts [2-5]. When pigeons show their tumbling, their neck muscles are become excited especially in lotan pigeons (one type of roller) because after shaking and before release a bit it is easily observed muscular spasm. Coats of the blood vessel of an old bald-headed tumbler is thickened, indicating irregular and unnatural blood pressure. The appliances are about the only constant sign of epilepsy in the human brain [6]. In case of meat breed of pigeons as they are good for human consumption but for storing excess fat within their body, they sometimes suffer plaque within their arteries which leads to atherosclerosis and this is very similar with human. For instance, carneau and King Pigeon is the successful breed, but for their fatty body their own fitness as well as egg laying and longevity will be a question. In market affairs at the age of 28 days those squabs are slaughtered and for this they do not suffer obesity which leads to heart diseases especially atherosclerosis. The objective of this study is to

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mention that pigeon remains an important model to study on the basis of lesion development is associated with human atherosclerosis.

Fatty feed in birds: By maintaining minimum fatty feed in their diet on those breeding stocks (any meat breeds) cause obesity. In addition, if those pigeons do not get more flying independence by the keepers in their loft, these problems may more fatal. 42 days under free-feeding conditions of 9 wild pigeons increased body weight 17% when there was no incubation [7].

Plaque observation in pigeons: Sort out 400 healthy at the age of 3 years or upward into three categories (control line with casual feed 100 pigeons; high fatty feed providing group 100; moderate feed 100; low fatty feed 100). Set 50 pair of adult pigeon (3 years or upward) of white carneau × racing homer) for observing their progenies up to 1 year. Preparation of feed need to be provided the pigeons. After four years 500 pigeons will be dressed and isolate their hearts for diagnosing the percentage of plaque.

White carneau pigeons: Since 1958, studies on the spontaneous atherosclerosis were found in pigeon breeds [2, 8]. Hundred-fifty white carneau pigeons from 1 to 13

years old and found that 104 (69%) had coronary artery atherosclerosis [7]. A few reports indicated that pigeons may live beyond 15 years, possibly as long as 30 years, but there is no adequate record of the lifespans of large number of birds [9]. Out of 262 pigeons, 47 of these birds have died. Ovarian haematoma which killed 10 females was the leading single cause of death. It did not see related to atherosclerosis. A study described lesions which considered infarcts in a number of different species—22 of 96 mammals and 24 of 84 birds [10]. Myocardial infarction has been experimentally produced by highly artificial regimens in rhesus monkey [11], and in rats [12], rabbits [13], and dogs [14]. The white carneau pigeon is unique among non-primate model in that it develops naturally occurring (spontaneous) atherosclerosis at both the celiac bifurcation of the aorta and in the coronary arteries [2]. Foam cells develop into fatty streaks which progress into mature plaques in the absence of elevated plasma cholesterol and other traditional risk factors [15,16]. These non-induced atherosclerotic lesions are morphologically and ultra-structurally similar to those seen in humans and occur at parallel anatomical sites along the arterial tree [4,17-19].



Plate 1. White carneau pigeon.

Show racer pigeons: Show racer pigeons are resistant to atherosclerosis, while consuming the same cholesterol-free diet. This susceptibility difference occurs despite similar plasma cholesterol and lipoprotein concentrations in both white carneau and show racer [20]. Age and heredity were the biggest factors in atherosclerotic susceptibility [2]. Preliminary crossbreeding studies indicated a polygenic mechanism of inheritance [21] with resistance being the dominant trait. Three years are required in order to definitively characterize the complete atherosclerotic phenotype.



Plate 2. American show racer.

Comparative findings in the above pigeons: A 15-year crossbreeding study at the University of New Hampshire examined grossly visible lesions (or lack thereof) at three years of age in the celiac foci of susceptible white carneau, resistant show racer, and F1, F2 and backcross progeny. The results supported autosomal recessive inheritance of susceptibility to spontaneous atherosclerosis in the pigeon [22]. Ninety-one genes were uniquely expressed in the susceptible white carneau cells compared to 101 genes exclusive to the resistant show racer [7].

SUMMARY

Pigeons are worldwide distributed birds, so it is possible to find out the result on their condition of hearts which are related with human diseases like obesity then atherosclerosis. The management of the pigeons all over the world through their ideal and balanced diet and their production was remarkable. Selective breeding ensures many table-breeds like king, carneau, Polish lynx, maltese, mondain, runt, etc., and among these carneau and king is the best for their moderate size of their breast meat. Since, all meat breeds are obese which can be led finally atherosclerosis but for human consumption this incident is ignored always. In white carneau pigeon there is found atherosclerosis which is same with human. Studies suggested that racing homer is resistant to atherosclerosis. After crossing between white carneau and racing homer, it can be a sort out that their offspring are suffered with this atherosclerosis or not.

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CONFLICTS OF INTEREST

No potential conflict of interest was reported by the author.

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