



# Bacterial Causes of Arthritis in Pigeons

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## Abstract

Arthritis can be considered as a threat for production due to it causes losses. The condition is produced by multifactorial including include infection and mangemaetal factors. Bacterial infections including *Salmonella typhimurium* (*S. typhimurium*) var. Copenhagen, *Staphylococcus aureus*, and *Enterococcus faecalis*, are most important bacterial pathogens inducing arthritis in pigeon. Lesion characterized by swollen, hot painful joint. Lameness is seen case of hock and toe joint, as well as dropped wing inability to fly in wing joint affection. Prevention depends mainly on hygienic measures and treatment of infective bacteria. The objective of this mini review is to reminders with bacterial causes of arthritis in pigeons.

**Keywords:** Arthritis; Columbidae; Pigeons; Hock Joints

## Introduction

Pigeons are a member of family Columbidae, in the order Columbiformes. Bird's body has short necks, and short slender bills. Pigeons primarily feed on seeds, fruits, and plants. Best Popular type of Pigeons are Indian Fantail, Dagoon pigeon, American Show Racer, Egyptian Swift pigeon, English Pouter, French Mondain, Birmingham Roller and Giant Runt. Pigeons are raised in a pair, as one pair of male and female pigeon stay together for their whole life. Domestic Pigeons are reared for meat and eggs. Some breeds of pigeons are purchased with high prices and used by the enthusiasts for flying and sporting competition [1].

Pigeons are a flying bird anatomy and physiology has evolved to make life in air much easy, the larger bones are pneumatic, *number of joints* is reduced, breast muscles are strong and big and those of leg lie high on the leg or on body and movements are controlled by long tendons and wings are long covered with flight feathers [2].

## Arthritis

Bird's skeleton has many joints. Bird's wing bends at

three joints, leg of bird has three major joints (hip, knee and ankle or hock joints well as joints of bird's feet and 3 toes [2].

*Salmonella typhimurium* (*S. typhimurium*) var. Copenhagen, *Staphylococcus aureus*, *Enterococcus faecalis* and *Mycoplasma synoviae* are most bacterial pathogens inducing arthritis in pigeon. By arthritis, the cartilage lining the joint is worn down, causing pain and making pigeon unable to fly. Both *Acinetobacter lwoffii* and *Mycoplasma columbinum* were reported to be isolated from swollen swollen elbow-joint of a female pigeon and right shoulder joint swollen of racing pigeon, respectively [3,4].

Arthritis can be classified according to its start into primary condition in birds when the affection started in joint or secondary to problems as ascending of microbial infection following septicemia or injury leads to infected joint or joint supporting tissues [5,6]. Osteoarthritis is the most common form of arthritis in pet birds. In many cases, many joints can be affected in case of septicemic infection.

Infectious arthritis causes economic losses due to the reduction of productivity, besides representing a sanitary problem and is one of the main causes of condemnation

of pigeons in slaughterhouses. Arthritis in pigeon affects productivity and prevents usage of valuable birds in racing and sport. Arthritis will cause pain in the bird experiencing the condition and making pigeon unable to fly.

### Types of Arthritis

Arthritis can be classified clinically according its cause into several types including:

1. Osteoarthritis: this type is age-related condition resulting as degeneration of joint tissue.
2. Septic arthritis: This is when the inflammation that occurs is due to a bacterial infection e.g. staphylococcus and streptococcus.
3. Rheumatoid arthritis - Resulting from immune-related processes.
4. Articular gout: It is a sign of metabolic disorder resulting from toxic waste products of high protein accumulating in bird's joints.

### Bacterial Causes

#### ***Salmonella typhimurium (S. typhimurium) (Paratyphoid):***

Clinical signs include slimy green or bloody diarrhea, poor body condition, infertility or embryonic death, panophthalmitis with secondary blindness, arthritis, and sudden death [7]. By pigeon fanciers, swelling of the wing joint is referred to as "boils". The shoulder and joints of the leg can also be affected. Most infected birds remain carriers (asymptomatic).

#### ***Staphylococcus aureus***

It is a bacterium that can be observed in crippled pigeons by a thick, or cannot fly as a result of an inflammation in a joint. Ruffled feathers, Lameness, low mobility, swollen above and around the hock and feet can be seen as signs. Also, sudden deaths can be occurred from acute septicemia. Tenosynovitis, most commonly in the plantar area of the foot or just above the hock joint. Infected joints may have clear exudate with fibrin clots [8,9].

#### ***Streptococcus bovis (S. bovis)***

*Streptococcus bovis* was diagnosed in pigeons with variable clinical signs ranged from hyperacute death to chronic lameness with arthritis. Experimental intravenous inoculations of *S. bovis* in pigeons was resulted in prostration and chronic loss of weight

#### ***Enterococcus faecalis (E. faecalis)***

Enterococci are non-motile, gram-positive, normal microflora present in all bird species' intestinal tract. Infections with the enterococcus occurs secondary to another

disease. Clinical signs of acute infection are associated with septicemia, and include depression, lethargy, ruffled feathers, diarrhea, and a decrease in egg production. Depression, lameness, and head tremors may be noted. If untreated, most affected birds die.

### Prevention

Good hygiene in the nest, hatchery, and any surgery or intervention (processing, e.g. toe clipping). Vaccination against infection, especially of parent birds, is likely. Good management, low stress and immunosuppression protection from any cause would all be of benefit. Competitive exclusion with non-pathogenic bacteria has been shown to be effective.

### Conclusion

Arthritis can occur in pigeon due to a bacterial infection. Osteoarthritis and septic arthritis are especially prevalent in avian medicine. Bacterial or septic arthritis is can end a bird's life. Birds have cuts on their skin bacteria can penetrate the wound and access to the bird's internal organs and joints cause inflammation in this area (arthritis). Joint looks swollen and warm when touched.

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