

PSITTACOSIS



“Platycercus flaveolus”, Lithograph, John Gould, *The Birds of Australia*, 1840-1848.

“As cage birds they are as interesting as can possibly be imagined; for, independently of their highly ornamental appearance, they differ from all other members of their family that I am acquainted with, in having a most animated and pleasing song; besides which they are constantly billing, cooing, and feeding each other, and assuming every possible variety of graceful position. Their inward warbling song, which cannot be described, is unceasingly poured forth from noon to night, and is even continued throughout the night if they are placed in a room with lights, and where an animated conversation is carried on”

John Gould, 1841.

So wrote the great Victorian ornithologist, John Gould in 1841, describing for the first time to the British public one of his newly discovered exquisite Australian parrots. Gould was so charmed by these little birds whose "extreme cheerfulness of disposition and sprightliness of manner" he said "render it an especial favourite with all who have had an opportunity to see it alive". How great an attraction, he accurately predicted, would the "betcherrygah", (as it was known to the Aborigines), prove back home in the parlours and drawing rooms of the great British gentry, if he could only get one home alive. Eventually he was able to get some of the little singing birds home to Britain and they proved to be an instant an immense success. In fact the little singing betcherrygahs became an enormous drawcard for a glittering array of the "fashionable gentry" of London, to Gould's sitting room. The great Victorian naturalist Professor Richard Owen's wife, recorded in her diary for 27th March, 1841, "Lord Northampton's evening party. Richard very tired and thought he would not go...after dinner R felt better... he was glad afterwards he went, for Prince Albert was there and Mr Gould bought his pretty singing New South Wales parrots".

The rage for exotic birds soared over the ensuing decades and a passion developed among the fashionable to own them. Victorians strove to fill their magnificent conservatories with live birds. In the Nineteenth century, however, exotic live birds were extremely difficult to successfully transport from the far flung regions of the British Empire, such as the Australian colonies. In consequence the next best thing was to have them killed and sent to the taxidermist to be prepared for display in the conservatories and drawing rooms of the aristocracy. This led to the indiscriminate slaughter of hundreds of thousands if not millions of birds in Australia and in the Americas. It is an arresting thought that in those times there appeared to be no concept whatever of the possibility of man driving a species to extinction. Many of the birds that Gould would depict in his magnificent ornithological productions are in fact extinct today and in most part, due to the hand of man. Gould would have been horrified at the prospect of the extinction of a species, especially of his beloved betcherrygah, yet he indulged himself as fully as anyone in shooting the very objects he so admired in order to collect them for his studies and displays.

The North American Carrier pigeon, was once the most abundant bird on Earth, reports describe migratory flocks of immense size that could literally dull the sun and take hours to pass overhead. In 1895 the American Indian Chief Simon Pokagon, reminisced "I have seen them move in one unbroken column for hours across the sky, like some great river, ever varying in hue; and as the mighty stream sweeping on at sixty miles an hour, reached some deep valley, it would pour its living mass headlong down hundreds of feet, sounding as though a whirlwind was abroad in the land. I have stood by the grandest waterfall of America and regarded the descending torrents in wonder and astonishment, yet never have my astonishment, wonder, and admiration been so stirred as when I have witnessed these birds drop from their course like meteors from heaven." Yet by 1914 the Passenger pigeon, incredibly, was extinct due largely to the shooting "sport" it provided.

Thankfully Gould's "betcherrygah" or budgerigar as we know it today, managed to survive the Nineteenth century unlike the American Carrier pigeon, and our children will be able to experience its song and "extreme cheerfulness of disposition and sprightliness of manner". However humanity's ability for wanton destruction of his fellow creatures cannot be overestimated and sadly we cannot assume that our descendents of the Twenty Second century will have "an opportunity to see it alive". It seems some little justice that our avian co-habitants on this planet may strike back with the occasional dose of psittacosis!

PSITTACOSIS

Introduction

Psittacosis (or ornithosis) is disease of both wild and domestic birds that can also infect humans.

The clinical manifestation is most commonly an “atypical” pneumonia or “influenza - like” illness.

History

Psittacosis was first described as a human disease in Europe in 1879

Pathology

Organism:

Chlamydia psittaci is a Gram-negative obligate intracellular bacterium.

There are 10 known genotypes based on sequencing of the major outer protein gene, ompA.

Each genotype has host preferences and virulence characteristics, although these overlap.

Epidemiology

Psittacosis has been recognized throughout the world, including the United States, the United Kingdom, Europe, the Middle East, Asia and Australia.

Most cases are sporadic but outbreaks of infection may occur rarely within individual households or through contact with affected pet shops or poultry processing plants.

Reservoir

Birds of all types can act as a reservoir.

Healthy birds may be *carriers*.

1. This is especially common for **psittacine** birds:

- Budgerigars
- Parrots
- Lorikeets
- Cockatiels

2. Other birds may less commonly include:

- Pigeons

- Turkeys
 - Ducks
 - Occasionally chickens.
3. Birds are the primary reservoir, but transmission from other animals has also been reported. Cats, dogs, goats or sheep may rarely be infected.

Transmission

- Infection is generally acquired by inhaling dust from dried faeces or fresh or dried ocular and nasal secretions from infected birds. Direct contact with birds is not required for infection. Dried secretions can remain infectious for many months.
- Note that birds do not have to be “sick” to spread the organism.
- Rare person-to-person transmission *has* occurred.

Incubation Period

In humans:

- The incubation period is 4 days to 4 weeks, (most commonly 10 days).

In birds:

- The incubation period in birds is extremely variable, from 3 days for acute disease to years for reactivation of latent infection, often at a time of stress.

Infection in birds is usually *asymptomatic* or may cause lethargy, anorexia, ruffled feathers, ocular or nasal discharge, or diarrhea.

Some birds die rapidly; others become wasted or dehydrated. The organism is shed in feces, urine, and respiratory secretions.

Period of Communicability

- Infected birds may shed the agent intermittently for a *prolonged* period.
- Shedding may be precipitated by stress on the birds such as cold, crowding or shipping.
- Dried secretions may remain infectious for many months.

Susceptibility and Resistance

- Chlamydia psittaci is highly infectious.
- At risk groups include bird owners, pet shop employees, veterinarians, poultry-processing workers, zoo workers and taxidermists.
- Older adults and pregnant women may have a more severe illness.

- Immunity following infection may be incomplete and reinfection occurs occasionally.

Clinical Features

The clinical picture of psittacosis is usually one of “atypical” pneumonia or “flu-like” illness.

The illness usually lasts for 7 - 10 days and is mild or moderate.

The severity can range however from asymptomatic to severe.

“Typical” cases show:

1. Abrupt onset of symptoms
2. “Constitutional” symptoms.
 - Malaise, lethargy
 - Headache
 - Myalgias
 - Arthralgias.
3. Respiratory symptoms:
 - Cough, usually “dry”.
 - Shortness of breath.
 - Pleurisy.
4. It may be more severe in:
 - **Pregnant patients**
 - Elderly
 - The immunosuppressed
 - Untreated patients
5. **Rare** complications include:
 - Encephalitis
 - Endocarditis
 - Myocarditis / pericarditis

- Thrombophlebitis.
6. Relapses may occur, especially when there has been *inadequate* treatment.

Investigations

Blood tests:

1. FBE:

- There may or may not be a leucocytosis

2. CRP/ESR:

- The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are usually elevated.
- In one Australian series, the mean peak ESR was 50 mm/hour, and CRP was 129 mg/L

3. Serology:

- Infection is generally diagnosed by seroconversion on paired acute and convalescent phase sera, although a single high acute phase titre in the setting of clinically compatible illness is significant.
- Low positive titres are common in high-risk groups.
- False positives may occur in *C. pneumoniae*, *C. trachomatis* and occasionally in *Legionella* infections.
- Antibiotic treatment may delay or attenuate antibody formation so convalescent sera should be taken at least two weeks after the acute specimen.

4. PCR:

- A polymerase chain reaction (PCR) test is available at the Victorian Infectious Diseases Reference Laboratory and can be performed on **respiratory** specimens if rapid definitive diagnosis is required.

Culture:

Culture is not routinely done since *C. psittaci* is highly infectious when cultured, requires specialized media and is only performed in specialized laboratories

CXR:

CXR usually (about 80% of cases) shows features suggestive of an “atypical” pneumonia, patchy bilateral infiltrates.

Less commonly focal consolidation changes may be seen.

Management

Most patients can be managed as outpatients.

1. Simple analgesics for “constitutional” symptoms.
2. Antibiotics: ²
 - **Doxycycline** for 7 - 10 days; 100 mg (child 8 years or older: 2 mg/kg up to 100 mg) orally, 12-hourly

Or

 - **Clarithromycin** for 7 - 10 days; 500 mg (child: 7.5 mg/kg up to 500 mg) orally, 12-hourly

Or

 - **Azithromycin** for 3 - 5 days; 500 mg (child: 10 mg/kg up to 500 mg) orally or IV, daily.

Duration of therapy is generally 7 - 10 days, except for azithromycin, which may be used for 3 - 5 days because it has a long intracellular half-life. Duration of therapy however will also depends on the clinical response.

For full prescribing details see latest edition of Antibiotic Therapeutic Guidelines.

3. Isolation:
 - This is not necessary, but instruct the patient to cough into disposable tissues.

Bird management:

- Wearing gloves and dust masks is recommended when cleaning areas with which birds have frequent contact such as cages and bird feeders.
- Prevent or eliminate infections of birds by quarantine and antibiotic treatment.
- Appropriate surveillance of commercial flocks, pet shops and aviaries should be instituted.
- Destroy or treat infected birds and disinfect premises.
- Birds suspected of being infected should be referred to a veterinarian for diagnosis and treatment as required. The Avian Medicine Section at Primary Industries Research Victoria, Attwood (03) 9217 4200 has further details of specimen collection and transport requirements.
- If birds were recently purchased the origin of suspected birds should be traced. This is the responsibility of the Department of Human Services in liaison with the Department of Primary Industries.

- Prophylactic use of tetracyclines can suppress, but not eliminate, infection in flocks and may complicate investigations.
- For disinfection of floors and cages use a 1:100 dilution of household bleach in water or 70% isopropyl alcohol.

Notification

Psittacosis (Group B disease) must be notified in writing within five days of diagnosis.

References

1. The Blue Book, Website, 16 November 2015.
2. eTG - March 2018
3. Michael J Richards et al. Psittacosis in Up to Date Website, May 2018.

Further reading:

The Ruling Passion of John Gould, Isabella Tree, 1991.

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