日常生活でペットからうつる人と動物の共通感染症

日常生活において、身近なペットからうつる人と動物の共通感染症について、病気の知識や予防の方法などを広く普及する。

《主催》人と動物の共通感染症研究会

《司会／座長》
「日常生活でペットからうつる人と動物の共通感染症」
岡部 信彦氏（国立感染症研究所感染症情報センター長）

《演者》
「猫からうつる病気：猫ひっかき病」
丸山 総一氏（日本大学 生物資源科学部 教授）

「犬由来細菌感染症（ブルセラ症とカプノサイトファーガ症）」
今岡 浩一 氏（国立感染症研究所 獣医科学部 第一室長）

「オウム病を知る－鳥と安心して暮らすために－」
福士 秀人氏（岐阜大学 応用生物科学部 教授）

「わが国における動物由来感染症対策」
森田 剛史氏（厚生労働省 健康局結核感染症課 課長補佐）

Workshop I

ワークショップ I

"Zoonoses: Diseases that Transfer between Pets and Humans in Daily Life"

The aim of this workshop is to disseminate knowledge and prevention of zoonoses that be transmitted from pet animals in daily life.

Organizer: Society for Zoonoses Research

MC / Chairperson:
"Zoonosis: Diseases that Transfer Between Pets and Humans in Daily Life"
Nobuhiko OKABE, MD, PhD, Director,
Infectious Diseases Surveillance Center, National Institute of Infectious Diseases

Speakers:
"Cat-Scratch Disease"
Soichi MARUYAMA, DVM, PhD, Professor, College of Bioresource Sciences, Nihon University

"Bacterial Infection from Dogs and Cats – Brucellosis and Capnocytophaga canimorsus infection –"
Koichi IMAOKA, DVM, PhD, Laboratory Chief, Laboratory of Reservoir Control of Zoonoses, Department of Veterinary Science, National Institute of Infectious Diseases

"What is 'Psittacosis'? – Worry-free Living with Companion Birds –"
Hideto FUKUSHI, DVM, PhD, Professor, Faculty of Applied Biological Sciences, Gifu University

"Countermeasures in Japan for Preventing Zoonoses"
Takeshi MORITA, DVM, Deputy Director, Tuberculosis and Infectious Disease Division, Health Service Bureau, Ministry of Health, Labor and Welfare

《主催者および座長メッセージ　ORGANIZER & CHAIR MESSAGE》

日常生活でペットからうつる人と動物の共通感染症

Zoonosis: Diseases that Transfer Between Pets and Humans in Daily Life

国立感染症研究所感染症情報センター センター長・岡部 信彦
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人にとって動物は、畜産動物として、ペットとして、それぞれ必要な、大切なものです。また野生動物は我々と住みわけが必要ですが、自然の中で「生」を感じさせてくれるものであり、地球は人だけのものではないことを思い知らされてくれます。動物園などで、子どもたちをわくわくさせてくれるものもあり、科学研究上重要な役割を果たしてくれるものもあります。

ことにペットは、日常生活の中でことに子どもたちに「生命」を教えてくれるものであり、人々の気持ちを和ませてくれるものでもあります。しかし動物は生き物である以上、感染症の原因となる微生物（細菌・ウイルス・寄生虫など）を持っており、無菌動物は特殊な状況でしかあり得ません。その微生物は、人にとって健康上の影響のあるものが少なからずあります。またペットブームといわれるものは、従来から良く知られているペットのみならず、一般の人々でも野生動物や珍獣との接触を容易にし、思いがけない感染症との遭遇の可能性を増加させています。動物を飼うときには、動物を正しく知る必要があり、また両者の間にはある程度のバリアも必要です。人の健康も守り、動物の健康も守らなくてはいけないからです。

日本は諸外国に比べて動物からうつる感染症の少ない国ですが、このワークショップでは、全体の日本の状況、ネコ、鳥、ヤギやヒツジなどからの感染症についてそれぞれの専門家から話を伺うことにしました。ペットや動物が人々にとって危険なもの、ということではなく、「正しい動物とのつき合いと人の健康」を理解することがこのワークショップの目的です。

動物は人のことを考えることは出来ませんが、人は動物のことを考えることが出来ます。

Animals, whether they be farm animals (livestock) or companion animals (pets) are important and necessary to the lives of humans. And, although wild animals - by definition - are separated from our daily lives, they help us understand something of the meaning of life and nature. They remind us that this planet is not ours alone. Zoo animals also provide exciting experiences for children and opportunities for scientific research.

The pets in our everyday lives teach children the importance of life as well as providing a special comfort to a great many people. Yet, we must be ever mindful that animals are living organisms that also carry microorganisms such as bacteria, viruses, parasites which are capable of causing infectious diseases. (Germ-free animals exist only under unique circumstances). So the chances that these microorganisms may affect human health at some point are more than likely. With the recent boom in the pet business people can now acquire any kind of animal, from traditional pets to wild and/or rare species. Contact with wild animals in particular increases the chances of exposure to unexpected infectious diseases. So it is necessary to be properly informed, understand how to keep our animals and be aware that a certain distance or barrier between humans and animals is required. This is not only so that we can protect our own health but also so we can protect the health of animals.

Zoonosis is not common in Japan compared to many other countries. However, in this workshop we will learn from specialists working in different fields about the general situation Japan faces regarding infectious diseases carried, respectively, by, cats, birds, goats, sheep and other animals. The purpose of the workshop is not to raise an alarm that pets and animals pose a risk to our health, but to understand the importance of keeping the correct “relationship between animals and people to protect human health”.

We should also remember that animals cannot think about how they to relate to us but we can think about how we to relate to them.

猫からうつる病気：猫ひっかき病

Cat-Scratch Disease

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現在，わが国では，約 1,000 万頭（2010 年現在）もの猫が一般の家庭で飼育されています。多くの猫は室内で飼育されており，人と身近に接触する機会も多いことから，猫と楽しく，また，快適な生活を過ごすためには，その生態や習性はもちろんのこと，病気，特に人と動物に共通の感染症に対する正しい認識を持つことが重要です。

猫ひっかき病は，その英名（Cat-scratch disease；CSD）が示すように，主に猫の掻傷や咬傷により感染します。その病原体は，猫の赤血球内に寄生している *Bartonella henselae* という細菌ですが，猫には何の症状も現しません。CSD は，子供やネコノミが多数寄生した子猫を飼育している人に多発します。猫に引っかかれて 3 ～ 10 日目に，傷口に虫さされに似た病変が形成され，丘疹から化膿や潰瘍にまで発展する場合もあります。さらに，1，2 週間後にリンパ節が腫脹し，数週間から数ヶ月続くこともあります。発熱，倦怠，食欲不振などもみられます。猫ノミは，猫と猫の間で本菌を伝播させたり，猫から人に CSD を感染させる上で，重要な役割を果たしています。猫はノミの糞便中に排泄された菌を，グルーミングの際に歯牙や爪に付着・汚染させます。これらの猫が，人を引っかくと傷口から菌が侵入して感染します。私たちが全国の動物病院に来院した猫 690 頭について調査したところ，その 7.2% が *Bartonella* 属菌を保菌していることが明らかになりました。地域別の猫の感染率は，寒冷な地域より温暖な地域の猫，また，飼育（生息）密度が高い都市部の猫で高い傾向がみられました。猫ノミは温暖・湿潤な所で繁殖することから，猫の感染状況は，猫ノミ等の分布や感染猫と接触する機会の多寡と関係しているといえます。

CSD の予防には，性格のおとなしい猫を飼うこと，定期的な爪切り，猫（特に子猫）との接触後の手指の洗浄，猫による外傷の消毒，ネコノミの駆除等の一般的な衛生対策で対応します。

Cat-scratch disease (CSD) is a worldwide zoonosis caused by cat scratch or bite. The causative agent is a bacterium, *Bartonella henselae* which infects in the erythrocytes of cats, but the cats don't show any clinical signs. CSD is more frequently observed in children and young adults under 20 years of age who own a young cat (< 1 year of age, especially if this cat is infested with fleas). CSD is characterized by a benign regional lymphadenopathy. Three to 10 days after receiving a cat scratch or a bite, a papule and then a pustule develop at the inoculation site. Regional lymphadenopathy develops 1 to 2 weeks after the inoculation and can persist for a few weeks to several months. Low-grade fever, malaise, and / or anorexia are often observed.

We investigated the prevalence of bartonella infection among 690 pet cats derived from six Japanese cities. *Bartonella* species were isolated from 7.2% of all the cats examined. High prevalence of the infection was found in cats from the southern part of Japan and with flea infestation. Warm and humid climates and flea infestation are strongly associated with the prevalence of cat infection, supporting arthropod vector involvement in the transmission between cats.

For prevention of CSD, it is recommended that only gentle cats be selected as companion animals and that cat owners wash their hands after handling pets and clean any bites, or scratches promptly with soap and water. Flea control in cats is also important for the prevention of CSD.

犬由来細菌感染症（ブルセラ症とカプノサイトファーガ症）

Bacterial Infection from Dogs and Cats – Brucellosis and Capnocytophaga canimorsus infection-

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イヌブルセラ症は*Brucella canis*によるイヌとヒトとの人獣共通感染症です。*B. canis*はアメリカでイヌ流産の原因菌として、1966年にLE Charmichaelにより発見されました。日本では、1971年の輸入ビーグル犬によると思われる繁殖施設内集団発生が最初の報告です。血清学的調査では、現在でも国内の3-5%ほどのイヌが感染歴を持ち、時折、繁殖施設で集団発生が認められます。イヌは流産時の汚物や、尿、乳汁などを介して感染します。オスは精巣上体炎、メスは死・流産を起こすことがあります。イヌブルセラ症は家畜伝染病予防法の対象外なので、治療を行うことも可能ですが、細胞内寄生菌のため、長期間にわたる抗生物質の投与が必要で、治療は困難です。日本では1999年以降10例と、ヒトの感染患者もまれに報告されています。ただ、*B. canis*のヒトでの病原性は、他の家畜ブルセラ菌よりも弱く、感染しても発症しない、または気づかない事も多いと考えられています。

カプノサイトファーガ・カニモルサス感染症はイヌ・ネコの口腔内常在菌である*Capnocytophaga canimorsus*による感染症で、イヌ・ネコ咬・掻傷により感染します。我々の調査ではイヌの74%、ネコの57%が口腔内に保菌していました。世界でも250例ほどと、まれですが、死亡率は約30%におよびます。国内でも2002年以降、29例の報告があり、そのうち8名が死亡しています。ただし、これら報告は敗血症や髄膜炎といった重症例です。そのため軽症者を含めた実感染者数は、もっと多いと思われます。いわゆる免疫学的弱者は易感染者ですが、健常者でも感染・発症します。ただ、患者の年齢は40才代以上に多く、男女比は3：1と男性が多くなっています。病気のことを理解し、イヌ・ネコとのつきあい方に気をつけていれば、必ずしも恐れるものではありませんが、認知度はまだまだ低く、今後の高齢化社会では気をつけなければならない感染症の一つです。

Brucella canis infection is a kind of zoonoses between dogs and human. In 1966 *B. canis* was found to be a causative pathogen in dog miscarriages by L.E. Carmichael. In such cases, the female dogs abort dead pups between 45-60 days of gestation without any other clinical signs. The dogs become infected through aborted materials, vaginal discharges, seminal secretions, urine or mother's milk. In Japan, outbreaks were observed at laboratory dog facilities in the 1970's. At the time, the canine brucellosis spread to not only laboratory dog but also to pet dogs. In more recent years, outbreaks at kennels have sometimes been observed. Because canine brucellosis is not a notifiable disease under Japan's Domestic Animal Infectious Diseases Control Law, the actual number of infected dogs is unclear. Recent sero-positivity of anti-*B. canis* Abs are estimated at 3-5% in pet dogs. *B. canis* is an intracellular bacterium so it is necessary to use antibiotics for a long period. Even after a great deal of time and effort it is quite difficult to cure the infected dogs. In the case of humans, 10 patients infected with *B. canis* have been reported in Japan since 1999. Because the pathogenicity of *B. canis* to humans is lower than those of the other Brucella strains, it is considered that humans do not usually develop clinical symptoms.

Capnocytophaga canimorsus, an intraoral indigenous bacterium of dogs and cats, can infect a human via a dog/cat bite or scratch. Our own investigations have revealed that 74% of dogs and 57% of cats have *C. canimorsus* in their oral cavity. *C. canimorsus* is known as a causative agent of serious systemic infection, i.e., sepsis, meningitis, septic shock, DIC and sometimes death. The first case of *C. canimorsus* infection was reported in 1976. Since then, around 250 cases have been reported world-wide and its mortality rate is approximately 30%. In Japan, 29 cases have been reported since 2002, and 8 of those resulted in death. All those patients showed severe symptoms so it is suspected that there must be many more unreported cases when the illness is only slight. More than 90% of patients have been over 40 years old and around 75% male which suggest that age and gender are key infection risk factors.

It is widely recognized that the aging society will advance in Japan, meaning that greater attention will be needed in order to avoid zoonoses derived from pet animals.

オウム病を知る－鳥と安心して暮らすために－

What is ‘Psittacosis’? – Worry-free Living with Companion Birds -

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オウム病はオウム・インコ類やハトなどの鳥類が持っているクラミジアと呼ばれる微生物がヒトに感染することによって起きる病気です．オウム病と診断した医師はただちに届け出ることが義務となっています．日本では1999 年以降, 年間 20 例くらいが届け出られていますが，近年は減少傾向にあります．オウム病を防ぐには感染源となる鳥を発見し，治療することが必要です．クラミジアを持っている鳥は一見健康のまま病原体であるクラミジアを糞便中に排出します．これが感染源となります．沈鬱や緑色便をだすなど症状を示す鳥の場合には大量の病原体が糞便中に含まれるようになるので，飼い主が感染するリスクはかなり高くなります．しかしながら，クラミジアは細菌の一種です．適切な抗生物質により治療することができます．

私たちのこれまでの調査では，健康診断として調べられた鳥の数パーセントからクラミジアが検出されました．以前は 5% くらいでしたが，近年は減少しています．クラミジアが検出された鳥種をみると，オカメインコやセキセイインコなど家庭でよく飼われている鳥でした．検出率という観点では，検体数が少ないのですが，ヨウムなどの大型鳥種で高い検出率でした．

クラミジアの検出は遺伝子検査により行われます．材料は新鮮な糞便です．クラミジアが検出された場合は獣医師の指導により治療を行います．鳥種により抗生物質の投与方法が異なることはいうまでもありません．ヒトでも同様に抗生物質により治療されます．適切な対応がなされれば，治癒します．

オウム病を防ぐには鳥の健康管理を適切に行なうことが大切です．

Psittacosis is a zoonotic disease caused by transmission of Chlamydia psittaci bacteria from birds to human beings. In Japan, a doctor who diagnoses psittacosis has a duty to report the case to the government by the law. Since 1999, about 20 cases have been reported annually, although the number of official reports has been decreasing in these years. Prevention of psittacosis starts from detection of infected birds and treatment. Infected birds will excrete chlamydia into their feces without any clinical symptoms. Coming into contact with this fecal material can be the source of psittacosis in humans. If a bird shows symptoms including depression and greenish droppings, large amounts of chlamydia may become present in the feces and the risk of infection becomes higher. However, as chlamydia is a kind of bacteria, chlamydial infection can be treated by antibiotics.

We detected chlamydia in a small percentage of samples. Compared to our previous investigations, which showed a detection rate of approx. 5%, in recent years the detection rates have showed a decreasing tendency. Birds detected with chlamydia include cockatiels and budgerigars which are popular pet birds in Japan. Higher detection was observed in large psittacine birds including the African grey.

Chlamydia is detected by the examination of fresh feces by DNA diagnosis using PCR (polymerase chain reaction). Birds infected by chlamydia should be treated with antibiotics by a veterinarian and antibiotic inoculation should be chosen according to the species of bird. Human psittacosis can also be treated by antibiotics.

Psittacosis is a curable disease if appropriate treatment is administered but it is essential to prevent psittacosis through the examination and ordinary health care of companion birds.

我が国における動物由来感染症対策

Countermeasures in Japan for Preventing Zoonoses

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「動物由来感染症」という語は、動物から人に感染する病気の総称として用いている。

近年、世界では、従来知られていなかった新しい感染症が見つかっているが、それらの多くは動物由来感染症であると言われている。

こうした動物由来感染症に対応するため、厚生労働省では、「感染症の予防及び感染症の患者に対する医療に関する法律」（感染症法）や「狂犬病予防法」などに基づいた施策を講じている。

具体的には、狂犬病予防法に関しては、主要な感染源となる犬について、登録とワクチン接種を義務づけ、万一の国内侵入時のまん延防止を図るとともに、有事における円滑な対応に資するよう、対応ガイドラインの作成などを行っている。

また、感染症法に関しては、病原体の感染力や病気の重症度などを踏まえて類型化し、その類型に応じて、患者を診断した場合の届出や汚染物品の消毒、感染源 となる動物等への対応等の必要な措置が講じられるとともに、必要に応じて、ガイドラインやＱ＆Ａを作成し、動物由来感染症の対応に役立てている。

さらに、調査研究等により、最新の知見の収集等を行い、必要な対策が講じられるようにしている。

一方、動物由来感染症の予防のためには、個人の対応も重要である。各個人が感染症についての正しい知識を得て、日頃から動物との接し方に注意していただきたい。厚生労働省では、ホームページやポスター、ハンドブックなどを通じて動物由来感染症に関する情報発信をしているので、参考にしていただきたい。

The term “zoonosis” is used as a generic name for any disease that is transmitted to humans by animals. In recent years around the world outbreaks of new infectious zoonotic diseases have been reported, most of which are considered as non-existent in the past. To combat these animal-derived infectious diseases, Japan’s Ministry of Health, Labour and Welfare has been carrying out various counter-measures based on legislation such as the Law Concerning Prevention of Infectious Diseases and Medical Care for Patients of Infections (the Infectious Diseases Control Law), and the Rabies Prevention Law.

The Rabies Prevention Law, in particular, makes it mandatory for dogs (the main infection source for rabies) to be registered and vaccinated to prevent potential epidemic in the event that an unexpected virus enters Japan. The legislation also includes guidelines to efficiently carry out countermeasure operations during emergencies. The Infectious Diseases Control Law categorizes diseases referred to the infectivity of the agents and the severity of the diseases due to countermeasures such as notification of a diagnosed patient, how to sterilize contaminated materials and how to handle the infected animals. As required, question-and-answer sheets and other guidelines for tackling zoonoses are also prepared. In addition, research and investigations are also conducted to collect the latest knowledge so that all necessary measures can be developed.

On the other hand it is also important that people on an individual basis take appropriate action to prevent zoonotic diseases. I would like everybody, especially those encountering animals on a regular basis, to have accurate information about infectious diseases and take more care. I therefore encourage everybody to refer to the website, posters and booklets about zoonoses as published by the Ministry of Health, Labour and Welfare.

WS1-Record

WS1- 記録集

日常生活でペットからうつる人と動物の共通感染症

Zoonosis: Diseases that Transfer Between Pets and Humans in Daily Life

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Nobuhiko OKABE, MD, PhD, Director,
Infectious Diseases Surveillance Center, National Institute of Infectious Diseases

Hello, everybody. Thank you very much for making the effort to attend this meeting in spite of the snowy weather. I came here from Tokyo by Shinkansen, and the train was delayed for a long time due to the snow.

Today, several speakers will be giving talks on the subject of "Zoonoses: Diseases that transfer between pets and humans in daily life." We have a study group on zoonoses and that group has been helping out with this project. When talking about diseases affecting people and animals, the term "zoonosis" (plural "zoonoses") has been widely used in English over the years. We thought that this term was difficult for Japanese people to understand, and when the term is written in Japanese, the characters don't have a very good feel, so we named our study group "Hito to Dobutsu no Kyotsu Kansensho Kenkyukai" (Study Group on Infectious Diseases Common to Humans and Animals).

I am originally a pediatrician so I am actually a doctor who specializes in medicine for people. Indeed, doctors who work in the animal field such as veterinarians can discuss common themes such as the human diseases that also infect animals, although this is something that happens rather rarely in practice. Accordingly, we have held discussions with veterinarians on the keyword of animal diseases that infect humans, and tried to find some points in common between the two.

Up to now, such meetings or discussions between doctors and veterinarians have been held only rarely. Mostly veterinarians only talk about this issue within their own veterinarian circles, while doctors do so in their own doctor groups, so there are very few points of contact between the two groups. We wanted to discuss the issue by bringing doctors and veterinarians together. That is how this study group began.

For the present project, we selected the theme of zoonoses. I am sure those of you who are here at this meeting have a rough grasp of this subject already, as pets are naturally subject to a number of diseases. The general contents of our study meeting have been outlined in a pamphlet, entitled "Handbook of Infectious Diseases of Animal Origin 2012". In here, the sentence "rules should be followed even among intimate friends" appears. What this means is that because animals can't understand people, the onus is on people to understand animals well and care about them. Also, it is better to prevent diseases spreading from animals to humans in the first place than be forced to treat them after they have already spread to humans. That is the main drift of the study meeting.

On page 26, in the first of the Workshop I abstracts, I have written that "animals can't think about how they relate to us, but we can think about how to relate to them." This is my key concept.

I have asked four researchers to give talks today. I myself am Nobuhiko Okabe from the Infectious Diseases Surveillance Center of the National Institute of Infectious Diseases, and I will be serving as moderator of this workshop. Within Japan's Ministry of Health, Labour and Welfare - the administrative agency in charge of human health matters - there is a section that deals with infectious diseases called the 'Tuberculosis

and Infectious Disease Control Division'. Groups of veterinary technical officers and specialists are at work in the division. These groups are working on diseases that spread from people to animals, animal diseases, and they issue official warnings about these diseases, etc. Several leading experts in various fields from these groups are also with us today.

The first talk is entitled "Cat-Scratch Disease". The lecturer is Professor Soichi Maruyama of the College of Bioresource Sciences at Nihon University. The second talk is entitled "Bacterial infection from Dogs and Cats – Brucellosis and Capnocytophaga canimorsus infection". These names may be rather unfamiliar to you but they are infectious diseases which we all need to be vigilant about. The lecturer is Professor Koichi Imaoka, Chief of the Laboratory of Reservoir Control of Zoonoses at the Department of Veterinary Science of the National Institute of Infectious Diseases. The third talk, on the subject of "What is Psittacosis? – Worry-free living with Companion Birds", will be given by Professor Hideto Fukushi of Gifu University. And lastly, under the title of "Countermeasures in Japan for Preventing Zoonoses", Dr. Takeshi Morita of the Tuberculosis and Infectious Disease Division at the Health Service Bureau of the Ministry of Health, Labour and Welfare will speak about how administrative cautions are issued. It seems that we have ample time, so if you have any questions, not limited to the subjects of the talks but also on general issues related to animal-derived infectious diseases, please feel free to ask, and we will attempt to answer them to the best of our knowledge, although if the question falls outside our areas of specialty, we may not always be able to provide a clear answer. So that sums up how this section has been constructed. Please join in as much as you can.

Now, I would like to introduce the first speaker, Professor Soichi Maruyama. Looking at his talk title, the keyword is "cat" and the title is "Cat-Scratch Disease".

Professor Maruyama, please begin.

猫からうつる病気：猫ひっかき病

Cat-Scratch Disease

日本大学 生物資源科学部 教授・丸山 総一
Soichi MARUYAMA, DVM, PhD, Professor,
College of Bioresource Sciences, Nihon University

Hello, everybody. I am Soichi Maruyama of Nihon University. Today I am going to talk about cat-scratch disease (CSD) as a representative example of diseases from cats.

To begin, as Dr. Okabe introduced earlier, I will try to explain in simple terms about zoonoses, or zoonotic infections. As my slide shows, a zoonosis is an infectious disease or an infection that can be transferred between human beings and other vertebrates under natural conditions. Sometimes, zoonoses are spread from humans to other animals but, in many cases, they are spread from animals to humans. As was introduced earlier, the technical term for diseases maintained in nature by humans and other animals is 'zoonosis'.

Among the 1,709 pathogens that infect humans, almost half of them are zoonotic infections. Moreover, among 156 emerging infectious diseases listed as having begun to spread since 1970 (a number which is now a little higher), 73% have been found to be zoonotic infections. So, I think it is fair to say that we are surrounded by a great many infectious diseases from animals.

We share our living environment with a variety of animals. These include the livestock that provide the meat we eat every day. Also, in Japan in recent years, wild animals have been intruding more frequently than before into human residential areas. Cats and dogs are extremely popular as pets, and there are also many people who keep reptiles as pets.

According to the data in 2009, approximately 12,320,000 dogs and 10,020,000 cats are being kept as pets in Japan. This tells us that many people are pet owners. Actually, I am one of these people as I am a dog owner. When we look at the figures for the number of pets being kept per pet-owning household, it turns out that an average of 1.29 dogs and 1.7 cats are kept per household. So, from the data, it is clear that many of the households keep more than one animal as pet.

This is a dog that my family and I take care of. The way we treat pets in Japan is different to the old days. In treating them as members of the family, we have much closer contact with our pets. In this picture, we hug and stroke our dog every day and in general maintain a very close distance. But sometimes disease-causing agents carried by cats or dogs infect people accidentally. Given such circumstances, when we keep pets, we need to know more not only about the biology of the animals themselves, but also about the diseases they carry. So today, I would like to talk to you about CSD as an example of a disease that is often transmitted from cats to humans.

CSD was first reported over half a century ago in 1950 in France. The first case in Japan was reported three years after that, in 1953. However, it took a long time to isolate the disease-causing agent from the patients. It was finally identified in 1992. So I think we can count CSD as an emerging infection.

Unfortunately we do not have precise data on how many people have contracted CSD. The number of cases is taken from an article according to which there were approximately 22,000 cases in the United States in 1992, and the number increased to approximately 40,000 cases by 1997. The status of CSD in other

countries is totally unknown.

This is a questionnaire survey that was given to Japanese physicians in order to try to ascertain what types of zoonosis they had found among their patients. The respondents included internists and surgeons here in Kobe. According to the results, the most common zoonosis found by physicians both in Fukuoka and in Kobe was CSD. They also reported high rates of other diseases, such as psittacosis, which will be discussed later today, but the research indicates that CSD is the most common zoonosis in terms of the number of cases discovered. However, there is no legal requirement to report CSD infections in Japan, so there are unfortunately no national statistics.

The agent of CSD is the bacterium, Bartonella henselae. The bacterium can propagate in artificial medium, and Bartonella henselae is a very small bacterium that can exist inside the red blood cells of cats. I will explain later why bacteria in cats' red blood cells can be transmitted to humans through cat bites and scratches. These bacteria require several weeks to form a colony. A colony in this sense means that the bacteria have propagated in an artificial medium to the point where they form a clump large enough to be visible. Usually, in the case of coliform bacteria such as E. coli or Salmonella, a colony can be grown in an artificial medium within a single day. But in the case of Bartonella, the agent of CSD, the process takes several weeks. This bacterium will not grow into colonies unless we cultivate it for a very long period of time.

As for the symptoms, when an immunologically healthy individual is infected with CSD-causing bacteria, a papule will appear at the site of infection resembling an insect bite, (I will show you a picture of this later), or else the patient will develop a fever. Next, they will develop a general malaise, and then the nearby lymph nodes will become swollen. Many CSD-infected individuals exhibit these symptoms, but between 5 and 10% of them also go on to develop additional symptoms such as an eye symptom known as Parinaud's oculoglandular syndrome, encephalitis, and/or erythema nodosum (EN), which is an inflammation of the fat cells under the skin.

This picture shows an early lesion. Here is an injury that was caused by a cat scratch. This picture also shows where a claw mark on the arm has caused an injury resembling that of an insect bite but which doesn't heal. This picture shows a symptom developed by a student who is a graduate of my college. She comes from Kobe, and while she was taking an instruction course at a private veterinary clinic in Kobe during her summer vacation, she was scratched by a tomcat that had been brought to the clinic for spaying. According to the student, she developed the symptom shown here, and then her lymph nodes became swollen. Soon after the lesion occurs, such symptoms can appear. Later, she developed a fever and her lymph nodes swelled to the size of eggs, as shown in the slide. The lymph nodes close to the wound site caused by a scratch or bite become swollen like this. After that, the wound becomes red if it is rubbed and I have heard that it can be very painful.

This next picture shows lymph nodes in the inguinal area hugely swollen. This is a CT image, and you can see how the nodes have swollen. Next, looking at this patient's feet, you will notice a lot of fleabites. This is because the patient was bitten many times by the fleas infesting his pet kitten. He was bitten and then scratched himself many times. Then, the inguinal lymph nodes became swollen. When he went for a medical examination he was found to have been infected with CSD. This is an example of a flea-borne CSD case and the case is uncommon.

Here is a case in which neuroretinitis has developed. If a person touches the fur of a cat with CSD-causing bacteria and then rubs his or her eye with the same hand, the bacteria can transfer to the eye. Neuroretinitis or conjunctivitis may then develop.

When immunosuppressed individuals are infected with Bartonella henselae, they can develop bacillary angiomatosis, a condition that may resemble Kaposi's sarcoma, on the skin. In this picture, you can see a lesion that has developed on a finger. Such lesions can

mimic a granuloma. They may also develop, not only on the skin, but within the liver or spleen where they can produce serious symptoms. Occasionally, other symptoms such as a lung abscess or endocarditis can also appear.

As you might expect from the name of this disease, cats are the main source of CSD infections. When we performed examinations on 63 CSD patients, we found that the infections were cat-related in 58 cases(92.1%),. Cases involving kittens were particularly common. As was mentioned earlier, there are rare examples in which dogs are also carriers of the infectious agent.

Actually, these results were taken from research on antibody prevalence rates. In this research, we examined for the presence of antibodies in the blood, which provides an indication of whether or not an individual has been infected with a given disease in the past. Firstly, we roughly divided the subjects into those who had been in contact with cats and those who had not. As a result, we ascertained that 17.4% of the subjects who had been in contact with cats had antibodies to Bartonella henselae while, among those who had no contact, 7.9% had antibodies. Among those who were unsure whether or not they had had contact, the corresponding ratio was 4.8%. From this, we can say that having contact with cats is an important factor.

On this occasion, we checked the age distribution of patients with CSD and discovered that among children up to nine years old, the majority of such patients are boys, while among teenagers and adults up to their forties, the majority are female. However, this does not necessarily mean that there is any difference in sensitivity to the infection between males and females. It may simply reflect the frequency and intensity with which people come into contact with cats. For example, young boys who live with a cat at home may be more inclined than young girls to grab their pet suddenly, which scares the cat and may lead it to scratch or bite in response. In my own home, my children often play with the dog, and since the animal ranks the children at the bottom of the social hierarchy, they often get barked at or bitten. Still, the children continue to play with the dog without being discouraged. From this, it seems natural that boys would have a higher frequency of being scratched or bitten by cats. In the case of adult women, when the family has a cat, it is often the mother or elder sister who takes care of the animal, meaning that women tend to have a higher frequency of close contact with cats.

When we checked the age distribution from the antibody prevalence rate, we examined 25 male patients and 23 female patients clinically diagnosed as having CSD, regardless of whether or not antibodies were present. The results showed that an greater number of women were carrying antibodies to the disease. I have found similar results when I observe students at my own college. As may be expected, when cats are present, the female students get closest to them, stroking them or patting them on the head and saying “how cute!” From this, we can say that women generally have a higher ratio of involvement with cats than men do.

This slide shows the causes of CSD. All of these cases involved cats. Looking at the data, as you might expect, we find that 44.8% of the patients developed their CSD symptoms as a result of being scratched. Surprisingly, only a few of them developed their symptoms due to bite wounds. Interestingly, 41.4% developed symptoms after merely touching a cat and only 5.2% developed their symptoms due to fleabites. These cases all involved cats so we can say that bites, scratches or other close contact with cats are among the causes of CSD development.

This graph shows how CSD develops on a month-by-month basis. The number of patients increases up to a peak in September and October. Surprisingly, from February until around April, May and June there are fewer cases. I think this may be related in some way to the flea-hatching season. Possibly, when the hot season arrives, more fleas hatch and jump onto cats. This causes the number of CSD-infected cats to increase, and this in turn is linked to the increase in month-by-month CSD development.

This is the mode of transmission of CSD. Consider that this cat has the bacteria Bartonella henselae in its blood. A flea sucks blood from this cat, and later jumps onto another cat, where it again sucks blood and also deposits feces. The bacteria in the blood are mixed in with the feces, which sticks to the cat's skin or fur. We know from watching cats that they groom themselves frequently. While the second cat is grooming, it takes bacteria into its mouth as well as onto its claws. If this cat later bites or scratches a person, the bacteria can infect that person. Alternatively, when a person hugs a cat that has CSD bacteria on the surface of its body, the bacteria can infect the person by passing through an existing small wound, etc.

Cats are a reservoir of CSD infection. On this occasion, we researched the percentage of cats that actually host CSD bacteria. We also made separate tabulations for the percentages of infected male and female cats, and we found little difference between them. In our survey, the CSD carrier ratio was 7.7% for male cats and 7.1% for female cats. Moreover, the age-classified CSD carrier ratio rose progressively from the age of less than one year and peaked at between two and three years old. For cats over three years old, the carrier ratio declined significantly to 3.4%. Accordingly, we can say that a high percentage of cats from kittens up to three years of age carry CSD bacteria.

Next, what is the CSD situation among newborn kittens? As was mentioned in the earlier keynote speech, are these bacteria transmitted from mothers to their kittens? In order to research that issue, we conducted tests on the blood of newborn kittens. However, we did not find even any positive result among the 88 animals we examined. From this result, we ascertained that vertical transmission does not happen, or in other words, CSD bacteria are not passed from mothers to their kittens.

This time, we researched the regionally classified CSD bacteria carrier ratios among cats in regions throughout Japan from north to south, from Hokkaido to Okinawa. Our results show that in the northern region, no bacteria were detected at all in Hokkaido and Miyagi. However, the carrier ratios increased as we moved to regions further south. This is the result of a survey by veterinarians in Sanda City, Hyogo. Here, the carrier ratio was very low. As a tendency, the carrier ratios become progressively higher in regions further south. Also, cats in urban areas tend to have unexpectedly high carrier ratios.

This is because in the more southern parts of Japan, cats are infested with fleas all year round. Also, in urban areas, since the density of cats is high, free-roaming cats have more opportunities to meet other cats, making it more likely they will pick up fleas or become infected with bacteria in the course of fights with infected animals, etc.

We have also made a comparative study of different methods of keeping cats and their rates of flea infestation. Compared with cats that are kept indoors, those that is kept outside have almost double the ratio of flea infestation. When we examined the prevalence of CSD bacteria antibodies, we again found that the ratio of animals testing positive for antibodies is about double in the case of cats that are kept outside.

In other words, cats that are kept outside and are infested with fleas also have a very high CSD bacteria carrier ratio. These animals form an important reservoir of CSD infection.

Now, when a cat is infected with CSD bacteria, what kind of symptoms do they display? Actually, cats show very few if any symptoms at all. Cats that carry the bacteria develop relapsing bacteremia, which means that bacteria are present in the blood only intermittently. They appear for perhaps a year or more, then disappear for a time, and then appear again, and so on. This data shows the results of research conducted at my laboratory. The red sections indicate where CSD bacteria are present in the blood. If we follow the same cat over a period of time, you can see the bacteria appear here and again here, disappear here, and reappear here. You can see from this that the bacteria repeatedly appear and disappear from the cat's body. This is why even infected cats hardly ever

show clinical symptoms, and it also helps explain why it is difficult to discover whether an individual cat is a carrier of CSD bacteria or not.

As I said before, in recent years there have been occasional cases of CSD involving dogs. The British Medical Association's journal 'The Lancet' published a report by a Japanese researcher from Yamaguchi University about bartonellosis transmission from dogs, and our own group has also come across such a case.

Accordingly, we investigated how many dogs are actually carriers of CSD bacteria. We took blood samples from dogs with the cooperation of the Veterinary Association of Kobe City and the government of Saitama City. In Kobe, our examination of blood samples from 206 dogs did not reveal the presence of any CSD bacteria at all. However, DNA from this bacterium was detected in a blood sample in one case. In Saitama, we found ten cases in which dogs were carrying CSD bacteria and three cases in which dogs carried both Bartonella henselae and Bartonella clarridgeiae. From this result, we can surmise that dogs do not carry CSD bacteria permanently, but they may do so intermittently.

The method of diagnosing whether or not a cat is carrying CSD bacteria or not is to take a blood sample, examine the blood serum using the fluorescent antibody method, and ascertain whether the result is positive or not. This bright one is positive. The most important thing when bitten or scratched by a cat is to check whether there is an injury. To isolate the bacteria is not impossible, but is very difficult because, as I said earlier, the bacteria takes several weeks to grow into a colony. Also, physicians already use antibiotics for treatment of patients, which makes it rather difficult to isolate the bacteria. Another diagnostic method is the PCR method, which provides a way of detecting DNA from a blood or lymph node samples.

How do we treat patients who are infected with CSD? In many cases, antibiotics are used. But in general, antibiotics have very little effect when used on CSD in immunologically healthy people or for cats carrying Bartonella henselae, which are sources of infection. However, antibiotics such as erythromycin or doxycycline, etc., can be effective when given to an immunocompromised person or an AIDS patient. I suppose that if you visit a physician for CSD you are likely to be prescribed an antibiotic almost all the time. But in the case of CSD, such drugs have almost no effect. We have to wait for the infection to clear up by itself.

Lastly, I would like to talk a little about CSD prevention measures. The first thing you can do is to choose gentle-natured cats as your pets. This can be rather difficult, but in situations where you have a choice of many individual animals, if you choose a cat that is too energetic, you will have a bigger chance of being scratched by that cat when it grows up. So please be sure to consult with the cat breeder or provider regarding that point, and choose a gentle animal.

Next, clip the cat's claws periodically. As a cat's claws lengthen, they grow into a hook shape. So if they penetrate into the skin they can cut deeply. Also, if you are scratched, thoroughly apply an antiseptic agent to the wound. The antiseptic you keep at home is OK for this purpose. But even if the injury is minor, be sure to clean it thoroughly. And if the wound is deep, you must visit a physician for treatment.

Avoid excessive contact with cats such as kissing and sleeping together. Also, and this is a very basic thing, but always wash your hands after touching a cat. And gargle your throat. It is quite difficult to carry out these instructions. I doubt whether even I could follow them all the time, but at least I wouldn't let my dog sleep on my bed. Also, as I mentioned earlier, if your hand becomes contaminated with CSD bacteria and then you touch your eye, you might develop conjunctivitis or neuroretinitis, so please wash your hands thoroughly.

The transmission of CSD from cat to cat often involves fleas. In rare cases, fleas are also involved in transmitting CSD to people. So be sure to conduct flea countermeasures properly. Nowadays there are a variety of flea expellants available, such as insecticide-

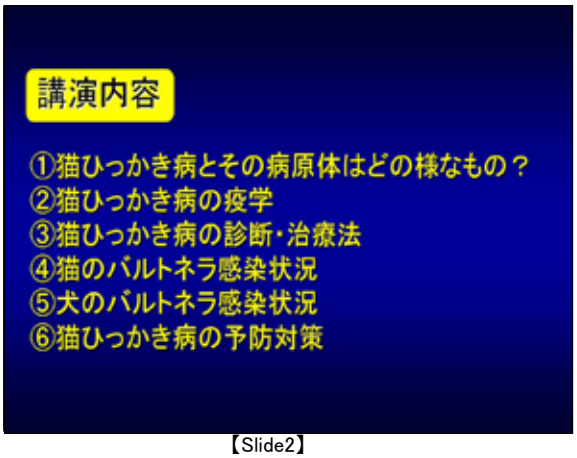
impregnated cat collars, liquid medicines and injections, so make use of these to get rid of fleas completely.

Also, immune suppressed people should avoid keeping animals. This is not only because of the risk of CSD but because, generally speaking, such people's physical resistance tends to be weak so they can be easily infected even by mild disease-causing agents. Such individuals can guard against getting diseases by refraining from keeping animals.

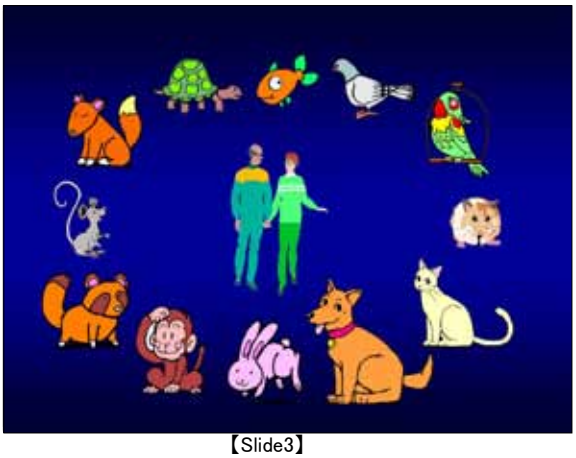
Even so, as Dr. Okabe mentioned at the beginning, I think that the positive effects of keeping pets at home are highly significant. Pets can help refresh our spirits and they provide children with emotional education. However, the animals themselves don't understand that kind of thing. So it is important to gain an understanding of how to handle animals, including the aspect of keeping them while also staying aware of potential diseases.

Finally, I would like to close my talk with the sentiment, "Let's enjoy your life with pets with appropriate manners." Thank you very much for your attention.

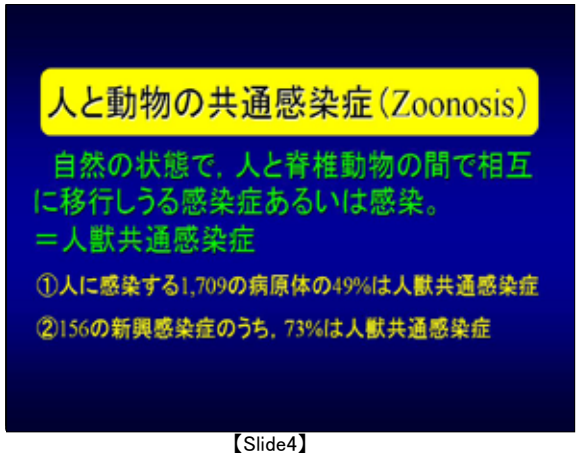
【Slide1】



【Slide2】



【Slide3】



【Slide4】

【Slide5】

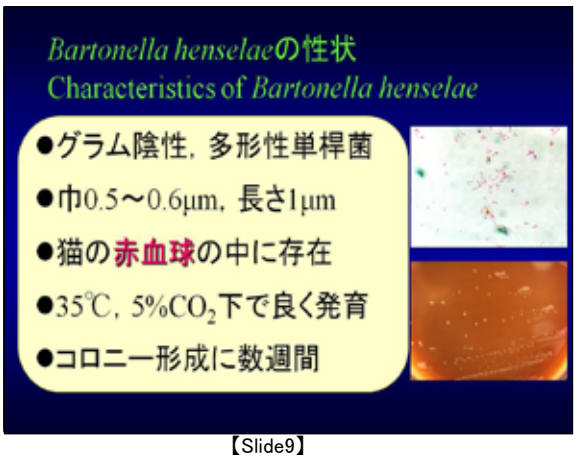
【Slide6】

【Slide7】

疾病	福岡市 内科医	福岡市 外科医	神戸市 内科医	神戸市 外科医	計
猫ひっかき病	13	14	13	15	55
皮膚糸状菌症	・	16	3	19	38
オウム病	15	・	15	3	33
トキソプラズマ症	3	5	・	11	19
サルモネラ症	6	・	4	・	10
クリプトコッカス症	4	・	4	・	8
トキソカラ症	3	1	1	3	8
疥癬	・	4	・	・	4
カンピロバクター症	1	・	1	1	3
マイコプラズマ症	1	・	・	・	1
パスツレラ症	・	・	・	・	・

感染症学雑誌 75:276-282(2001)から

【Slide8】



【Slide9】

【Slide10】

【Slide11】

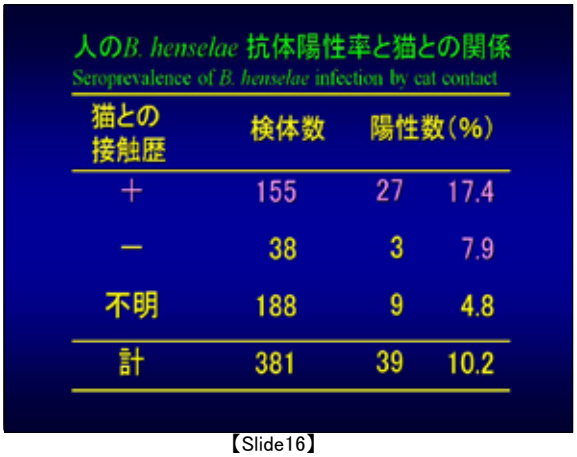
【Slide12】

【Slide13】

【Slide14】

年齢	男	女	計
0～9	6	1	7
10～19	4	8	12
20～29	4	5	9
30～39	0	5	5
40～49	6	10	16
50～59	4	3	7
60～69	1	2	3
70～79	0	3	3
80～89	0	1	1
計(%)	25(39.7)	38(60.3)	63

【Slide15】



猫との接触歴	検体数	陽性数	(%)
＋	155	27	17.4
－	38	3	7.9
不明	188	9	4.8
計	381	39	10.2

【Slide16】

人の*B. henselae* 抗体陽性率（性別）
Seroprevalence of *B. henselae* infection by sex

由来	性	検体数	*B. henselae* 抗体陽性数 (%)
CSD患者	男	25	7 (28.0)
	女	23	14 (60.9) *
獣医系学生	男	48	2 (4.2)
	女	81	12 (14.8) *

* $P<0.05$

【Slide17】

猫ひっかき病の原因
Sources of CSD

由来		例数	(%)
猫	子猫	41	58 (92.1)
	成猫	17	
犬		4	(6.3)
不明		1	(1.6)
計		63	

（公立八女総合病院 吉田博先生データ）

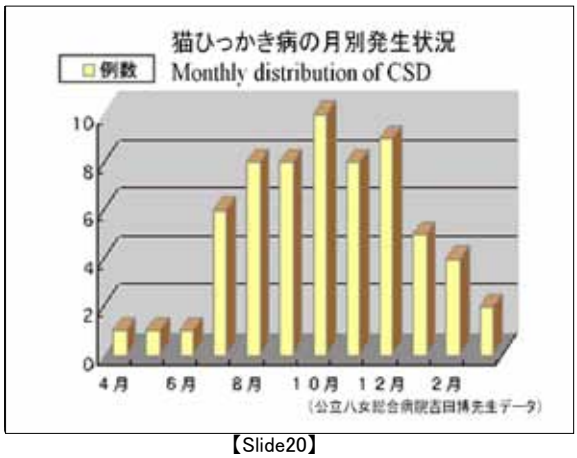
【Slide18】

猫ひっかき病の発症原因（58例）
Causes of CSD patients involving cats (58 cases)

発症原因	例数	%
ひっかき傷	26	44.8
咬傷	5	8.6
接触のみ	24	41.4
猫ノミの刺咬	3	5.2

（公立八女総合病院 吉田博先生データ）

【Slide19】

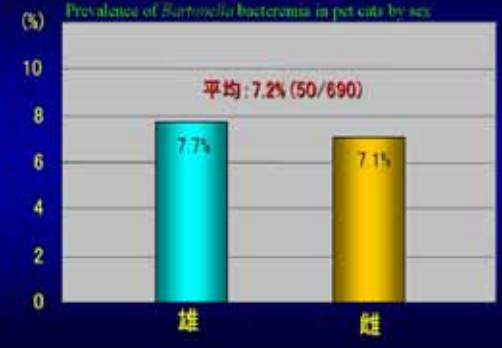


【Slide20】

猫のバルトネラ感染状況
Bartonella infection in cats

【Slide21】

飼育猫の*Bartonella* 保菌率（性別）
Prevalence of *Bartonella* bacteremia in pet cats by sex



【Slide22】

飼育猫の*Bartonella* 保菌率（年齢別）
Prevalence of *Bartonella* bacteremia in pet cats by age

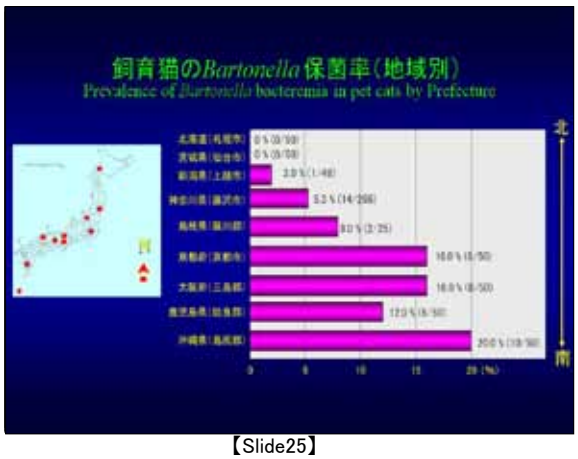
【Slide23】

仔猫の*Bartonella* 保菌率
Prevalence of *Bartonella* bacteremia in kittens

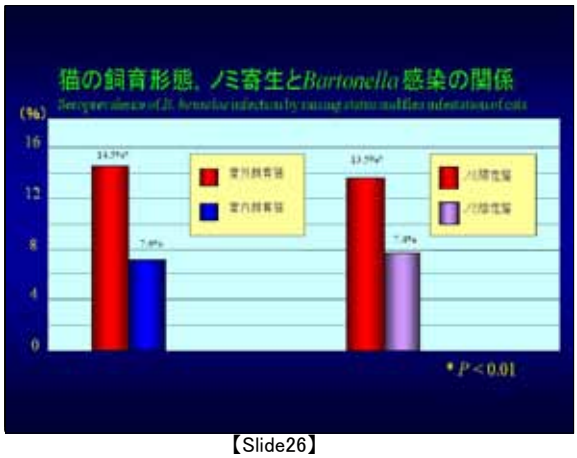
年齢	検体数	陽性数 (%)
新生子猫	88	0
子猫～成猫	162	5 (3.1)
不明	12	0
合計	262*	5 (1.9)

* 群馬県の猫

【Slide24】

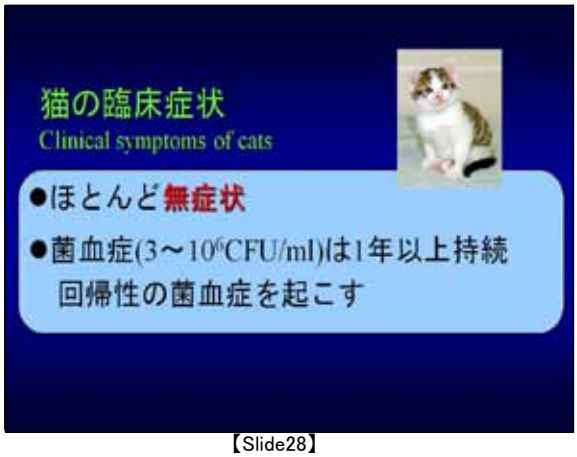


【Slide25】

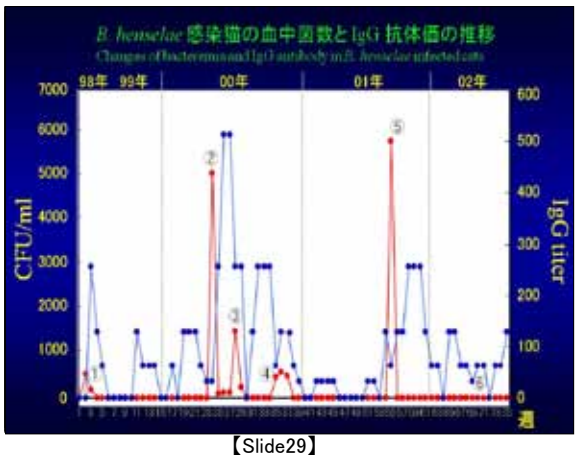


【Slide26】

【Slide27】



【Slide28】

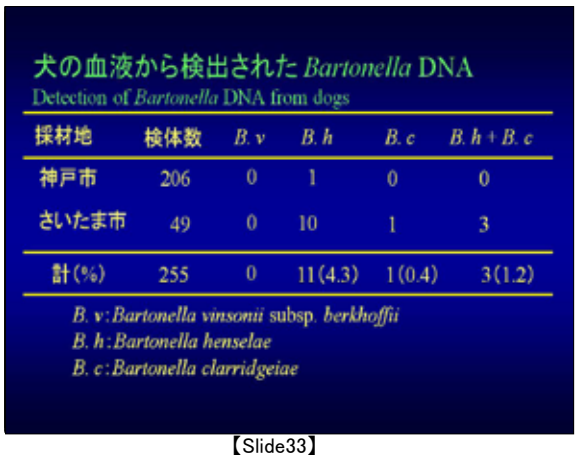


【Slide29】

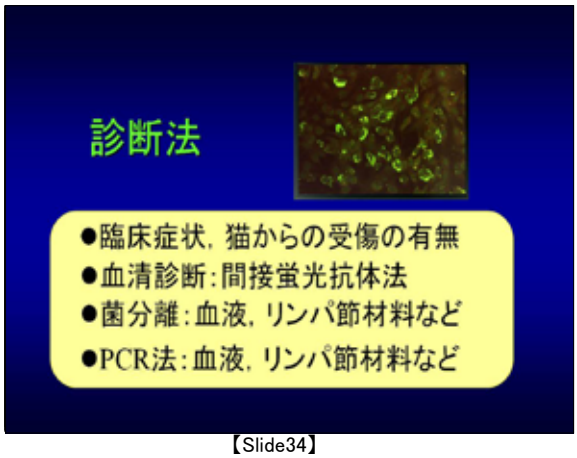
【Slide30】

【Slide31】

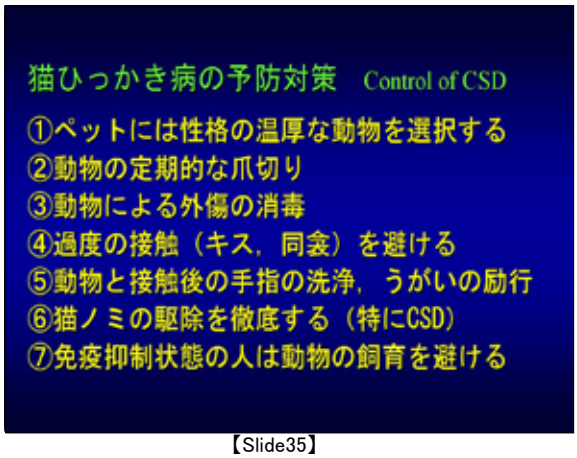
【Slide32】



【Slide33】



【Slide34】



【Slide35】

オウム病を知る－鳥と安心して暮らすために－

What is ‘Psittacosis’? – Worry-free Living with Companion Birds -

岐阜大学 応用生物科学部 教授・福士 秀人
Hideto FUKUSHI, DVM, PhD, Professor,
Faculty of Applied Biological Sciences, Gifu University

Hello, I am Hideto Fukushi of Gifu University.

So far today we have been hearing about mammals. However I would now like to talk to you about a disease called ‘psittacosis’, or ‘parrot disease’, which infects many kinds of birds.

Earlier on, we heard that, as a matter of historical fact, people have been keeping dogs for somewhere between 10,000 and 20,000 years, and cats for about 12,000 years. Both of these animals have been human companions for a very long time. We don’t know with any degree of accuracy how long people have been keeping birds, and I will be talking a bit more about this later on. Moving on to parrots and true parrots, when we see them in a zoo some of them are kept roosting alone while others are kept several to a cage. However, in the wild these birds live in groups.

Actually, parrots are extremely intelligent birds. Capable of speech and extremely active psychologically, they tend to live very well in groups. When people come along and abduct them from the wild and then keep them alone, I would like you all to understand what this means to the birds themselves. In situations where they are kept alone, the most important things for these birds are their owners. The birds seek their own psychological security through interaction with their owners, so it is very important for owners to take care of their birds in a responsible manner until the end of their lives.

In order to realize this, it is essential to maintain the birds’ health, and for this reason it is important to be aware of what kinds of diseases affect these birds. I will talk about this subject now.

First of all, the only zoonotic disease that people can catch from birds is psittacosis, and so I am going to talk about birds and this one particular zoonosis. Later, I would like to sum up the current situation regarding psittacosis, which is the main subject of today’s talk, including introducing a simple method of curing this disease.

But before that, let’s look at the broader subject of birds and people. This is an international conference, but I hope you’ll forgive me if I talk about Japanese history in the Heian, Kamakura and Muromachi periods. Speaking of the Heian Period, the historical drama series “Taira no Kiyomori” is currently running on TV. Within this drama we see both dogs and cats appearing, but what about birds? During that time period, many people probably enjoyed the beauty of birdsong. Indeed we have ancient ‘waka’ poems that speak of birdsong. So from this evidence we do know that Japanese people have associated with birds since ancient times.

During the Edo Period we know that people admired the brilliance of the plumage of birds such as white-eyes and enjoyed hand-training java sparrows.

In the Meiji and Taisho Eras, birds from many countries around the world were brought into Japan. Some were capable of talking or singing, such as the various species of parrot including the cockatiel, the rosy-faced lovebird, the African gray parrot, etc.

The Meiji Era was also the active period of the novelist Natsume Soseki, who wrote an essay about his pet Java

sparrow. He complained in that essay that he wanted to keep a Java sparrow, so he sent his houseboy out to buy a birdcage, but the boy took a long time to make the purchase. It seems that finch species such as the Java sparrow were well appreciated in old times, but these days a lot of people prefer to keep parrots or true parrots.

People often start by keeping something like a budgerigar. Budgerigars are extremely cute, but they are rather small and childish. When people want something they can interact with a bit more deeply, they may go in for a cockatiel. Cockatiels live for several decades and they can speak well. But if people still become less and less satisfied as time goes by, they may opt for a large parrot or true parrot species.

Looking at the data from the ministry of the Environment on pet bird sales, Japanese domestic production is about 84,500 individual birds, while another 115,000 individuals are imported, making a total of about 199,000 birds.

As I remember, back when I was a child attending elementary school, there was a shop selling small birds in our neighborhood. My father happened to be a teacher at this elementary school, and at the school we kept Bengalese finches as well as canaries. But people's familiarity with birds has changed so much that today's children probably have no idea whether canaries sing or what they sound like.

As you can see, the number of individual birds sold has declined, but in the case of many species, the seilling price for an individual bird has become very expensive.

Moving on to the subject of zoonotic diseases that can be transmitted between birds and people, today I would like to talk about psittacosis, a zoonosis that is hosted and spread by various species of birds. There is a disease spread by wild birds called 'West Nile fever' which has now become infamous. And then we absolutely cannot ignore avian influenza now that concern about 'bird flu' is extremely high. Last year, I received a sudden phone call on the subject from a junior high school student.

The students at the school were sketching a bantam in art class, and the call was to request me to certify that this bantam was not infected with avian influenza. So I performed an antibody test and a fecal PCR test and certified that the tests were negative. I'm sure the children all did their very best in drawing the bantam.

Apart from these viral infections, there are bacterial infections such as tuberculosis and salmonellosis. I have made a table showing these infections. For example, salmonellosis, which I mentioned earlier, is quite commonly found in reptiles I believe. Actually birds can also become sick from salmonella infections. The bacteria can also be present in bird feces, which can be a problem. And of course, there is psittacosis, which I will talk about in more detail later. Also, as was mentioned before, in many cases infected animals don't exhibit symptoms, but when people are infected it can be a serious problem.

Earlier I mentioned bird tuberculosis. In humans, this disease is usually caused by a mycobacterium called Mycobacterium tuberculosis. However, there are also atypical tuberculosis bacteria so it is necessary to take care. There are also many types of ectoparasites, which can cause problems if people come into contact with them.

In addition, although it is not shown here, some people also have allergies to birds, which are not the same as infections. I am sure some of you have allergies to dog or cat hair. In the same way, some people are allergic to the hair or shed skin of birds so if they come into contact with these things they may develop a sudden anaphylaxis, which can be life threatening.

Now, I think it is time to talk a little about my main subject today, psittacosis, or parrot fever. Psittacosis is actually an old disease. By the end of the 19th century a Swiss surgeon had already described a disease thought to be psittacosis. After that, in the early years of the 20th century, there was a major boom in parrots and true parrots within Europe. A succession of extremely

beautiful species was imported from Australia and owning such a bird became a fashionable pastime. Trends of one kind or another appear at any age in history. But as a result of the popularization of parrots and true parrots, there were many cases of psittacosis infection, and this created the momentum for a sudden advance in research into the disease.

In the case of Japan, during the 1930s and 40s, there were cases of people becoming infected from true parrots they had purchased while traveling abroad. But the first case of a psittacosis infection in Japan was not reported until 1957.

As I have drawn in the picture below, psittacosis is an infectious disease caused by a bacterial species called Chlamydophila psittaci, which is present in bird droppings. Usually the infection is not apparent in birds or, in other words, they host and excrete the bacteria without exhibiting any symptoms of the disease themselves. Also, as Imaoka-sensei reported, infected birds excrete the bacteria intermittently and not continuously. But because birds excrete the bacteria from time to time, it can be transferred from parent birds to their offspring, and also to people who breathe in the dust of dried bird feces. People tend to risk this mostly when cleaning birdcages, etc.

The ratio of psittacosis infections is comparatively high among women in their 30s and 40s, but this seems to be a reflection of the fact that women in this age group are more likely to be taking care of pet birds. While children and fathers often want to purchase and keep these birds, at the end of the day, looking after them tends to become part of the housework performed by mothers, so they have an increased chance of becoming infected.

The problem here is that bird droppings start off wet but, as time passes, they dry out and eventually crumble into dust. During this time, any C. psittaci bacteria present in the droppings remain viable, which means that they have the potential to cause an infection. So if a person breathes in this dust, it is possible that they will develop an infection.

If an infection becomes established, the early symptoms are similar to those of influenza, but even if the sufferer is treated for influenza, they will probably be treated with a macrolide antibiotic, which is effective against C. psittaci, and so they will recover properly. Unfortunately, however, if β -Lactam antibiotics such as penicillin derivatives are used, the treatment will have no effect and the infection will worsen which can lead to serious problems.

Up until the 1970s, there were many instances in which people were unable to obtain proper treatment and went on to develop systemic infection, which was fatal in some cases. The reports from that time include a number of case examples. Earlier in the workshop, the subject of skinship came up and in these reports there is one example concerning skinship. Two particular bird lovers were fond of talking about birds with each other. I don't think there were any bird cafés in the 1970s, but one of the bird lovers agreed to take care of the other's bird while that person was away traveling. Then, when that bird became sick, the first bird lover slept close to the bird. As a result the bird lover became sick with psittacosis and eventually died of the disease.

Bearing that example in mind, I would urge bird owners to maintain an appropriate distance from their birds. Now let us look at what kind of microorganism C. psittaci is, which is the cause of this disease. This photograph was taken through an electron microscope. I borrowed it from Professor Matsumoto who taught me about Chlamydophila. Here you can see some small particles inside a large cell. These are Chlamydophila psittaci.

If you only see this photograph it is difficult to realize the size, so I will show you some other things alongside to allow you to compare the size. Some things we have been talking about, for example, gram-negative bacteria, are here on the left side. Actually, the objects listed on the left are all seen through an optical microscope.

'Gambian trypanosomiasis' is a form of chronic sleeping sickness, which is transmitted to humans in Africa by the tsetse fly. This is the amoeba that causes amebic

dysentery, this is Borrelia, and this is Treponema. And here is the anthrax bacillus. This is E. coli, and this here is Staphylococcus, which was introduced earlier.

When the images of the smallest objects on the right side are expanded, we can see the smallest details can be made out through an optical microscope. C. psittaci is here. Here is Vaccinia, which is a little smaller than C. psittaci. Vaccinia is the virus that was used to eradicate smallpox. Last year was a fantastic year in which the cattle disease known as 'rinderpest' became the second disease ever to be eradicated. Like smallpox, it was eliminated by means of a vaccine and an eradication plan. These influenza viruses measure about 100 to 200 nanometers in length, roughly two-thirds of the length of a C. psittaci bacterium. So it is a very small virus.

Next, this is the human papillomavirus and the poliomyelitis virus. The group on the right side consists of extremely small microorganisms that are best viewed through an electron microscope that uses a beam of electrons rather than ordinary light. A little different to the other pathogens introduced so far, C. psittaci can't be propagated in an artificial medium such as agar. It requires something called a cultivated cell. So, from the standpoint of living matter, it is very close to being a virus. This very small particle goes into cells where it replicates, and when it does so it takes two forms. One is an elementary body, rather like a spore, which is indicated in red. This is very tiny, but it is extremely resistant to external environmental conditions. For example, it can survive for about one month at low temperatures.

When in the elementary body form, C. psittaci does not replicate, so unless people breathe in these elementary bodies, there is no problem. But on the other hand, if elementary bodies infect a person, even if an antibiotic is administered, it will not be effective. Most antibiotics take effect at the time of cell division so they only affect the C. psittaci in reticulate body form, which is indicated in green. This is the form in which C. psittaci undergoes cell division. At this time the bacteria's metabolism becomes extremely active and it multiplies by binary fission. Antibiotics take effect for the first time at this point.

Accordingly, since antibiotics do not take effect unless they enter cells, you can understand that the most effective antibiotics are those that feature high transitivity inside cells. For this reason the number of usable antibiotics is limited.

Actually, the zoonitic infections caused by Chlamydophila bacteria are not limited to psittacosis. Around the world, between 20 and 30 cases of conjunctive inflammation caused by Chlamydophila from cats have been reported. Also, Chlamydophila can cause miscarriages. In a case that occurred in France, Chlamydophila abortus was isolated from a pregnant woman who miscarried while on a sheep farm where sheep had also miscarried, so the case was suspected of being a zoonitic infection. Pigs also carry Chlamydophila bacteria and this is considered to have a possible relation to zoonotic infections.

Incidentally, koalas also carry Chlamydophila. This is a major problem for koalas because when they are infected they become blind. They are also unable to breed because Chlamydophila affects the urinary and genital organs. Once after I attended a conference on Chlamydophila in Europe, sitting in the airplane on the way back to Japan, an elderly lady sitting next to me asked me "what is your work?" I answered, "I am researching about Chlamydophila." So she said to me, "that is an important disease for koalas too, so please work hard on your research." In fact, since koalas live in trees if they lose their sight they find it impossible to move from tree to tree. They then become unable to eat which is a very serious problem.

These bacteria are called Chlamydophila pecorum and they usually live in cattle and sheep. It is not clear how or whether these bacteria are involved in disease so investigating their role has become a task for researchers.

I will talk now about Chlamydophila infections in birds.

These birds are 'galahs' and, in their natural state, they live pleasantly in groups such as this. I think it is wrong to catch such birds and abduct them from the wild. But I suppose it is only natural that so many people want to keep them once they see how cute they look. In a book I translated there is a sentence that reads, "Please think about how many birds have disappeared from the natural world so that you can keep one bird."

Chlamydophila bacteria have been identified as being carried by 145 species of birds comprising 18 orders. The causative agent of psittacosis is C. psittaci, but birds also carry C. abortus. And although this has yet to be publically announced, a survey of birds in Ghana found that they were carrying C. abortus and not C. psittaci, and there may be some other varieties out there in the natural world.

These bacteria can be found in all kinds of birds around the world. As I mentioned earlier, the year before last I had a chance to visit Ghana where I found Chlamydophila present in their wild birds. This means that it has spread worldwide. In almost all cases, such infections are subclinical. However, if symptoms do appear the infected animals lose their vitality and become unable to eat food. In the case of birds the feathers tend to stand erect. The animals become progressively thinner and eventually sustain liver damage.

However, in the case of birds, even when they do become thin they do not look so different because of all the feathers they have.

The pathogenic factors include stress. For example, if the owner of a bird suddenly brings home a different bird and the owner focuses their attention too much on the new bird, the first bird may worry about "what will happen to me?" which may lead it to develop symptoms.

This bird has a downcast attitude and also has diarrhea. Take a good look and you will see it appears scruffy. When I made a presentation overseas and used the case of this bird, I described it as being melancholy. Somebody asked me, "For a diagnosis of melancholy, the patient must tell the doctor that they don't feel well. How can you know a bird is feeling melancholy?" So I simply answered, "I'm a vet, so I know" At which everybody laughed. I'm sure that if you keep a bird, you will know if it has respiratory symptoms, etc. However, symptoms do differ depending on the kind of bird. In Amazon parrots, scarlet macaws, etc., nervous symptoms tend to appear.

Next, of the birds that display symptoms of conjunctivitis, cockatiels and budgerigars are perhaps the ones we are most familiar with. However, some other types of birds have comparatively low resistance, such as pigeons. I will talk a bit about pigeons towards the end, but at present, Chlamydophila infections have been largely cleaned up among captive birds. But among wild birds, which nobody can take care of, they have become a major problem.

In humans, the incubation period for psittacosis is between one to two weeks. Okabe-sensei talked about this earlier. Large-scale outbreaks of psittacosis have occurred in bird rearing facilities in some prefectures around Japan. When we checked the amount of time from the day that people were exposed to the pathogen until pathogenesis, amazingly it matched the theoretical incubation period closely. This has been announced in a paper, which I recommend you to read.

In one zoo there was a case in which psittacosis was suspected but it was later established that this was not the case because the incubation time did not match. In preparing to attend this conference I discovered several things. There was a Q&A concerning psittacosis, which included the question, "I bought a bird yesterday and today I have a fever. Could this be psittacosis?" And the answer was, "From the psittacosis incubation period, this is impossible." I was glad to see this Q&A. And I think it is very good that people connect birds with psittacosis.

When a person develops psittacosis, the first symptoms to appear are fever and cough. Then the respiratory tract is affected and, without prompt treatment,

the patient will eventually develop meningitis. The frequency with which community-acquired pneumonia develops is not as high. But in the case that atypical pneumonia, or where the origin is unknown, psittacosis should be included as a possible factor in the differentiation.

Actually, in the case of the large-scale outbreak I spoke about earlier, one of the patients infected at a zoo was diagnosed in Osaka. The zoo itself was in Shimane, which is quite a long way from Osaka. When people become infected in places where animals are exhibited, the problem is that they take their infection home with them. So patients can be scattered across the nation. And once that happens, unless there is horizontal cooperation, it is very hard to establish that a large-scale outbreak has occurred.

I have a long-time acquaintance named Dr. Kishimoto. After he gave a lecture about psittacosis, a medical doctor visited him and consulted him on a case. "I have a patient with a fever that remains persistently high and doesn't return to normal. I questioned the patient in detail and learned that he had visited a certain animal place. What do you think?" I heard that following the consultation the doctor changed the drug he was administering and that the patient's fever subsided at once.

As for transmission of the disease in and through birds, because psittacosis is a subclinical infection in birds they excrete the pathogen without exhibiting any symptoms. When people breathe in particles of excrement from infected birds they can develop influenza-like symptoms. In severe cases, psittacosis can be fatal in humans. However, since the 1980s the number of deaths in Japan due to this disease has probably been zero. This is because doctors of respiratory tract medicine have made a very conscious effort to educate their profession. So in most cases doctors can make a proper diagnosis, which has eliminated deaths due to this infection.

Of the diseases classified under the Infectious Diseases Law, at present psittacosis ranks as the fourth most widely reported disease. Mass outbreaks of the disease were reported in both 2001 and 2002. At that time there were a huge number of cases. But ever since the Ministry of Health, Labour and Welfare began to issue instructions on how to prevent the disease, the number of cases has slowed to a trickle. At the moment there are less than 20 cases, and if this trend continues the number of reported cases will be even fewer.

Looking at the sources of infection, we find that the most common sources are - as one might expect - parrots, true parrots and pigeons, as well as, in some cases, birds other than parrots and true parrots where the species are rather hard to identify. At one zoo where an elk was having a miscarriage and required emergency surgery the vet involved failed to wear the usual gloves or mask. In that unavoidable situation the vet became infected. Such cases are unusual but they occasionally occur.

There is no legal requirement to undertake surveys of pet birds for Chlamydophila infection. Our laboratory carries out a variety of health examinations in response to requests from animal hospitals. In performing these examinations our primary purpose is student education. We give training on how to accept samples from outside, examine them, and return the results of the examination. I explain this to outside people, obtain their understanding, and then take sample specimens. The veterinarian in charge of the case should make the final diagnosis. Our examination results are merely reference materials. On the understanding that these examination results can also play a useful role in the eradication of psittacosis, I report them at study conferences such as this one.

This is from 2006, when 668 specimens were obtained, most of which were taken during medical examinations. Since then, we have examined facilities where birds are exhibited and also birds in the wild.

Now, I will try to explain how these examinations are carried out. For obtaining samples, we have the stools and liquid obtained by wiping the rectum. In most situations, to capture a bird and insert a cotton swab

into the anus would be stressful for the bird, so it is better to obtain a fresh stool. I ask people who wish the laboratory to perform an examination to send as fresh a stool as possible because it is not possible to obtain DNA from a hard stool.

From the sample, we extract DNA using a kit, and then we use PCR technology. There are several ways of employing PCR, and at present, as long there are at least several hundred bases, the DNA can be detected. The base sequence can be read to determine which species of Chlamydophila is present. As for the positivity ratio, until 2005 this was averaging approximately 5%. Then it fell steeply, reaching 1.3% in 2006, 2.1% in 2007 and 0.6% in 2008, before rising to 4% in 2009. The average for the four years from 2006 to 2009 was approx. 1.6%, representing a significant decline from the previous period. I believe this was the result of the effects of various daily activities and of heightened awareness among bird sellers.

On a bird type classification, the positivity ratio is high for cockatiels, but this is because the incidence of examinations is extremely high in the case of these birds. For the other types, the results are widely scattered. These days, cockatiels, budgerigars and rosy-faced lovebirds are mostly domestically bred in Japan. On the other hand, the birds listed on this slide are mostly imported. At present, the direct import of wild birds is prohibited so presumably the birds imported are only those species allowed into the country and are captive bred in breeding facilities in the country of export. Even from these birds, Chlamydophila psittaci is detected.

It is possible to identify what strain of C. psittaci these bacteria are. Although there is a standard strain, even in Japan they exhibit considerable genetic variation. There are not only one or two strains in circulation but a variety of genetically distinct types that are often present in the same host.

Up to this point we have only been dealing with captive bred birds so disease control is comparatively easy. All that is needed is to improve the awareness of bird owners and breeders. But unfortunately it is a very difficult carry out disease control for outdoor-living birds. In one example from our own university, a group under Professor Ishiguro carried out research into domestic pigeons in Gifu Prefecture. This side shows the situation in Gifu, and this side shows the nationwide situation. The results of this research indicated that the positivity ratio for C. psittaci in wild pigeons is about 80% in Hokkaido, about 60% in Tokyo, and approximately 23% nationwide. As you can see, these rates are much higher than those found in captive bred birds.

However, the problem is that the monthly-classified positivity ratios are totally different. For example, in September and October, C. psittaci is found in very high ratios among examined pigeons. But in December, April and June, when the same pigeon groups are examined, the bacterium cannot be detected. So the timing of the surveys is the key issue. Also, depending on the bird group, almost all the pigeons test positive, as shown here. There are numerous problems concerning pigeons. They not only carry the pathogen that causes psittacosis but they are also infected by fungal diseases and various other pathogens and harmed by fecal material.

Now, let us look at treatment. These are rainbow lorikeets (Trichoglossus haematodus), which are very beautiful birds. When a large-scale disease outbreak occurs among such birds, how should we treat them? They only drink juice, basically sucking on the juice of mature fruit.

So we have to get them into a situation where they will drink the juice we provide, and we mix the drug into that juice. However, when they are in a group, the more dominant members drink a lot and the bullied lower ranking birds can't drink at all. As a result, some of the birds will receive an excessive dose while others will not receive any drug dose at all. And if those bullied birds are removed from the group the disease occurs again in this leftover group. So it is very difficult to treat birds in groups. Also, birds such as lorikeets are highly intelligent. We can't say exactly how high,

although they are not as intelligent as humans, of course. Treatment is particularly difficult in the case of highly intelligent birds so we need to pay attention to this point.

On this occasion, we used a drug called Doxycycline. As I mentioned just now, the feeding habits, meaning what and how the birds eat, differs drastically from one individual to another. In the case of many bird species, we give the drug mixed into water for a period of 45 days. However it tastes very bitter - as you will know if you have ever tasted it. So the birds don't want to drink it which can be a big problem. Also, tetracycline group drugs break down easily when exposed to light. So if they are mixed with water and exposed to sunlight they probably won't remain effective half a day later. So this is another problem.

In the case of water birds drugs are administered in capsule form. When an examination turns up a positive result we put a capsule inside a fish and feed the fish to the bird. But birds can detect the presence of capsules with a high degree of accuracy so it can be very difficult to administer the drugs. For instance we sometimes notice that, after a bird has taken a capsule, they manage to bring it up and drop it from their beak.

Apart from this, a variety of drugs are used. In addition to Doxycycline, we use Oxytetracycline, Azithromycin and Clarithromycin type antibiotics. But one problem with these drugs is the side effects. In the case of humans, we can check the liver function while administering the drug to judge whether the result is good or bad. But with birds it is very difficult to draw a blood sample. Budgerigars, for example, only weigh between 10 and 20 grams. If several drops of blood are drawn from such a bird it may faint from anemia. Even taking two drops is difficult, which means trouble. Concerning this treatment, I consulted with Drs. Sanada and Nakano, who are involved in this clinical, and we prepared the slides.

Although the question remains as to whether birds are really cured or not by antibiotic therapy, we can at least say that no fresh discharges of the bacteria have been observed at the facility where the large-scale breakout occurred. This followed the proper administration of drugs and follow-up monitoring over the course of three years. But despite this, according to veterinarians who practice this treatment, sometimes there is a recurrence of disease because of the failure of drugs to work. So it is necessary to carry out follow-up examinations from time to time even when drugs have been administered, and if the disease recurs, drugs must be administered again.

Finally, as a rather unorthodox summary, in order for people to live amicably with birds, I want to emphasize that it is important to provide the birds with everyday health management. I expect that bird owners probably tell their birds, "I'm going out now," or "I'm home." Depending on the birds' behavior or reaction, such as how they eat, etc., the owners should be able to monitor their general health condition.

As has been pointed out many times it is important for owners to have a moderate degree of contact with their birds. Also, when you feel there is something wrong with your bird, contact a veterinarian immediately. The awareness of veterinarians has been improving thanks to a variety of activities. In the case of psittacosis, veterinarians also have to cooperate with doctors. I would ask veterinarians who suspect a bird they have examined of carrying psittacosis to tell the owner to consult a doctor because there is a possibility that the owner may have become infected from their bird. I would also like to ask patients that contract psittacosis to have their birds examined by a veterinarian. In dealing with this disease, we should cooperate tactfully with people in various fields.

Sometimes birds look as if they are having this kind of discussion too. I hope to realize a situation in which birds and people can live together without any problems, and I'd like to end by asking bird owners for their cooperation toward this objective.

Thank you very much for your kind attention.

オウム病を知る

ー鳥と安心して暮らすためにー

福士秀人

岐阜大学応用生物科学部獣医微生物学研究室

岐阜大学

【Slide1】

今日の内容

- 鳥と私たち
- 鳥と人獣共通感染症
- オウム病
- まとめ

【Slide2】

- 鳥と私たち
- 鳥と人獣共通感染症
- オウム病
- まとめ

【Slide3】

日本人と鳥

平安ー鎌倉ー室町

姿や鳴き声の美しさ

江戸

羽色の鮮やかさや手乗り

明治ー大正ー昭和

おしゃべりや歌声

平成

ほととぎす　鳴きつる方を　眺むれば
ただ有明の　月ぞ残れる

【Slide4】

鳥の販売数

(平成14年)

国内生産	84,500羽
輸入数	115,000羽
合計	199,000羽

環境省　ペット動物流販売実態調査報告書（平成15年3月）

【Slide5】

- 鳥と私たち
- 鳥と人獣共通感染症
- オウム病
- まとめ

【Slide6】

鳥類が伝播に関与する人獣共通感染症

- **オウム病**
- **ウエストナイル熱**
- **鳥インフルエンザ**
- **結核、サルモネラ症など**

【Slide7】

オウムインコ類に関係するズーノーシス

疾病	病原体	伝播様式	トリの症状	ヒトの症状
サルモネラ症	*Salmonella*	通常は経口 時として他の経路	不顕性（見掛け上健康）から急性の全身感染	多様、しばしば胃腸症状 時として発熱
オウム病	*Chlamydophila psittaci*	通常は吸入 時として他の経路	不顕性から急性全身感染	不顕性から重篤な呼吸器疾患 死に至ることもある。
エルシニア症	*Yersinia pseudotubaculosis* *Y. enterocolitica*	通常経口	不顕性から急性	消化器症状
結核	*Mycobacterium spp.*	通常経口 時として他の経路	局所から全身	局所から呼吸器や消化器系
外部寄生虫侵襲	接触	不顕性、掻痒 および貧血	掻痒と皮膚病変	掻痒と皮膚病変

【Slide8】

- 鳥と私たち
- 鳥と人獣共通感染症
- オウム病
- まとめ

【Slide9】

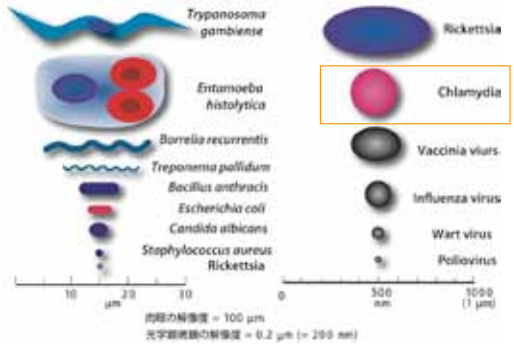
オウム病とは？

20世紀初頭にヨーロッパで流行
日本では1957年に初発例
（輸入例はそれ以前）
鳥が排泄したクラミジアに人が感染し発症

【Slide10】

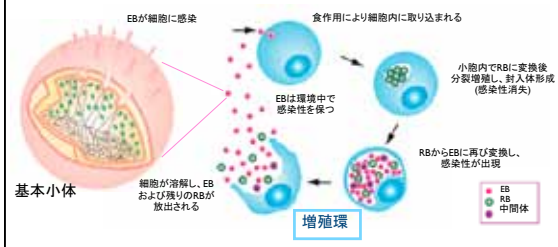
【Slide11】

病原体の大きさ



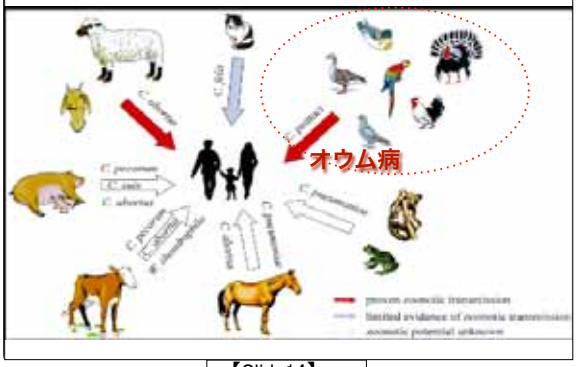
【Slide12】

基本小体：外部環境で長期間生残
網様体：細胞質内のみ・抗生物質感受性

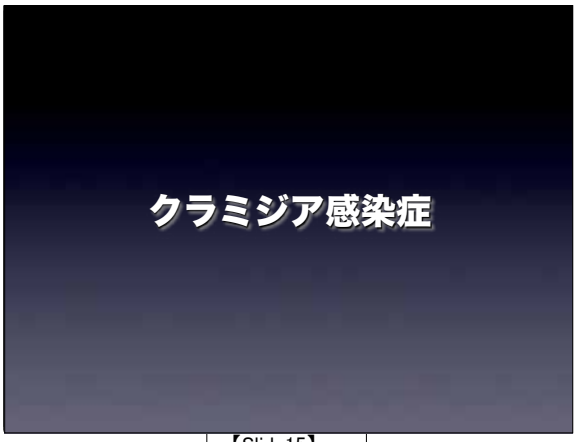


【Slide13】

クラミジアによる人獣共通感染症



【Slide14】



【Slide15】

オウム病（鳥クラミジア感染症）

宿主：18目145種の鳥類, ヒト
原因菌： ***Chlamydophila psittaci***
(Chlamydophila abortus)
分布：世界中のあらゆる鳥種
症状：不顕性感染
元気・食欲不振，羽毛逆立，削痩，緑白色下痢便
発症要因：ストレス，混合感染など

【Slide16】

各種鳥類の症状

比較的良く見られる症状
呼吸器症状，鼻漏，下痢，多尿，沈鬱

神経症状があるとされている鳥種
アマゾンオウム，コンゴウインコ

結膜炎
オカメインコ，セキセイインコ

比較的抵抗性
ハト

【Slide17】

オウム病（人）

潜伏期間は1～2週間

急激な高熱と咳嗽で発症

軽症の気道感染から、肺炎や髄膜炎までの多様な病態

市中肺炎における頻度はさほど高くはないが、中等症までの非定型肺炎と原因菌不明の重症肺炎では、必ず鑑別に入れる必要がある。

【Slide18】

鳥から人への伝播

不顕性感染：無症状で病原体排出
発症：元気消失・食欲不振，削痩，下痢

鳥の排泄物を吸引

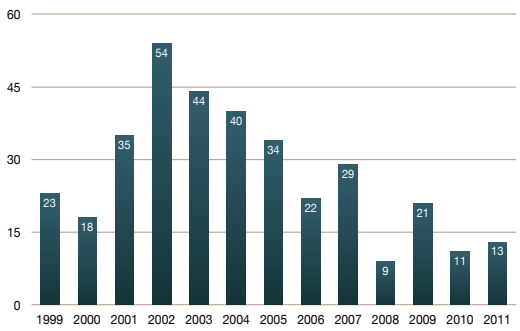
インフルエンザのような症状
重症例では致死的

【Slide19】

オウム病の現況

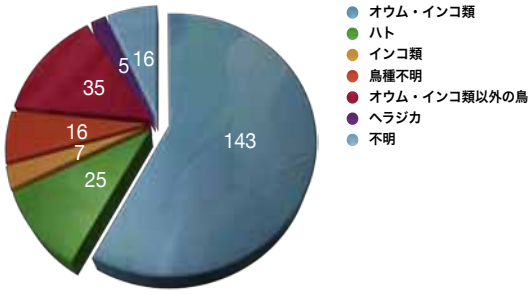
【Slide20】

1999年から2010年における届け出数



【Slide21】

1999年から2007年における届け出に記載された感染源



【Slide22】

鳥類のクラミジア保有状況

【Slide23】

我が国の愛玩鳥における鳥クラミジア症

2006年4月から2010年3月までにクラミジア検査依頼のあった検体

- 愛玩鳥販売業者（2業者，668検体）
- 動物病院（18病院，285検体）
- 鳥類展示施設（7施設，219検体）
- 上記以外，野鳥など（699検体）

【Slide24】

クラミジアの検出方法

1. **採材**
   - 鳥の糞便またはクロアカスワブを採取

2. **DNA抽出**
   - DNA抽出キットを用いてDNAを抽出

3. **PCR法による検査**
   - Nested PCR法またはReal-time PCR法

4. **塩基配列解析**
   - 一部サンプルに関しては塩基配列確認した

【Slide25】

年別クラミジア陽性率

	検査数（羽）	陽性数（羽）	陽性率（%）
2006年	988	13	1.3
2007年	328	7	2.1
2008年	353	2	0.6
2009年	202	8	4.0
合計	1871	30	1.6

【Slide26】

鳥種別クラミジア陽性数

鳥種	検査数	陽性数
オカメインコ	209	3
セキセイインコ	61	2
コザクラインコ	25	1
ヨウム	18	1
キガシラアオハシインコ	12	1
ショウジョウインコ	5	2
テンジクバタン	3	1
ギニアエボシドリ	3	1
ハツハナインコ	2	1
ソデシロインコ	2	1
コガネメキシコインコ	2	1
バナマボウシインコ	2	1
アヒル	35	1
上記以外の鳥種	1421	10
鳥種不明	71	3

【Slide27】

鳥種別クラミジア陽性数

主に国内繁殖・生産小型鳥

鳥種	検査数	陽性数
オカメインコ	209	3
セキセイインコ	61	2
コザクラインコ	25	1
ヨウム	18	1
キガシラアオハシインコ	12	1
ショウジョウインコ	5	2
テンジクバタン	3	1
ギニアエボシドリ	3	1
ハツハナインコ	2	1
ソデシロインコ	2	1
コガネメキシコインコ	2	1
バナマボウシインコ	2	1
アヒル	35	1
上記以外の鳥種	1421	10
鳥種不明	71	3

【Slide28】

鳥種別クラミジア陽性数

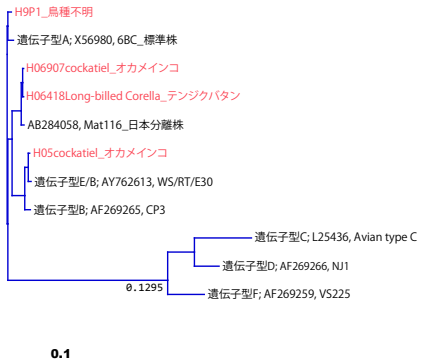
主に国内繁殖・生産小型鳥

鳥種	検査数	陽性数
オカメインコ	209	3
セキセイインコ	61	2
コザクラインコ	25	1
ヨウム	18	1
キガシラアオハシインコ	12	1
ショウジョウインコ	5	2
テンジクバタン	3	1
ギニアエボシドリ	3	1
ハツハナインコ	2	1
ソデシロインコ	2	1
コガネメキシコインコ	2	1
バナマボウシインコ	2	1
アヒル	35	1
上記以外の鳥種	1421	10
鳥種不明	71	3

主に海外から輸入される大型鳥

【Slide29】

系統樹　＊NJ法で作成



【Slide30】

野外の鳥：ドバトの調査例

県	検出率	
北海道	28/35	80%
東京	14/23	61%
神奈川	1/4	25%
岐阜	41/290	14%
愛知	10/81	12%
大阪	11/29	38%
広島	1/1	100%
合計	106/463	23%

岐阜県における月別検出率

2003年			2004年		合計
9月	11月	12月	4月	6月	
11/16	11/11	19/187	0/50	0/26	41/290
69%	100%	10%	0	0	14.1%

23%から検出

(Tanaka et al. 2005)

【Slide31】

オウム病クラミジア感染症の治療

【Slide32】

オウム病の ドキシサイクリンによる 治療方法

適応鳥種	投与期間	投与経路
全鳥種	45-60日	飲水
オウム類	45-60日	食餌
ヒインコ	45-60日	食餌
小型コンコ・ カナリア	45-60日	食餌
ゴシキセイガイインコ	45-60日	ネクター
水鳥類	45日	食餌
水鳥類	45日	経口

【Slide33】

オウムインコ類におけるオウム病の治療方法例

薬剤	投与期間	投与経路	備考
ドキシサイクリン	45日	飲水，経口，餌	ヨウム，ボウシインコ，コンゴウインコ，バタン類で嘔吐
オキシテトラサイクリン	5~14日	餌，飲水	ヨウム，ボウシインコ，コンゴウインコ，バタン類で嘔吐
アジスロマイシン	30日	経口	肝機能、腎機能に問題がある場合は使わない
クラリスロマイシン	30日	経口	
ミノマイシン	30日	経口，飲水	
クロルテトラサイクリン	45日	飲水，餌	ヨウム，ボウシインコ，コンゴウインコ，バタン類で嘔吐

【Slide34】

まとめ

【Slide35】

鳥と仲良く暮らすために

鳥の日頃の健康管理

鳥との適度な接触

おかしいと思ったら獣医師にすぐに相談

獣医師と医師の相互協力

【Slide36】

我が国における動物由来感染症対策

Countermeasures in Japan for Preventing Zoonoses

厚生労働省 健康局結核感染症課 課長補佐・森田 剛史
Takeshi MORITA, DVM, Deputy Director,
Tuberculosis and Infectious Disease Division, Health Service Bureau, Ministry of Health, Labor and Welfare

(Slide 1)
Hello, everybody. I am Takeshi Morita.

I am the final presenter in this symposium. The theme I have been given to talk about is "Countermeasures in Japan for Preventing Zoonoses". There are two main domestic laws that govern such matters, namely the Infectious Diseases Control Law and the Rabies Prevention Law. I intend to center my talk on these two laws.

(Slide 2)
Firstly, I would like to talk about "infectious diseases of animal origin". We use the term "zoonoses" as the name of our study group. These two descriptive names share the same meaning, but because the Ministry of Health, Labour and Welfare (MHLW) sees things from a viewpoint of protecting human health, it prefers talking about "infectious diseases of animal origin". So I want to start by confirming that these two terms have the same meaning.

(Slide 3)
This figure shows details that the process of countermeasures in Japan for preventing zoonoses has developed. In 1950, the Rabies Prevention Law came into effect. The aim of the law is to prevent the infection of rabies in humans. The countermeasures of the law were aimed mainly at dogs. Then in 1999, a number of species was added to the list of animals, cats, raccoon, foxes, etc., subject to quarantine provisions under the law. In 2004, the Ministry of Agriculture, Forestry and Fisheries (MAFF) strengthened animal quarantine by revising the quarantine methods under ministerial regulation.

On the other hand, the Infectious Diseases Control Law came into effect in April 1999. At the beginning, the measures for animals was to prohibit the importation of monkeys. But since that time, whenever zoonoses have become a problem, the list of prohibited animals has been expanded to include such species as the prairie dog, the masked palm civet cat, various bats, the Natal multimammate mouse, etc..

In 2003 the responsibilities of veterinarians and animal traders, the notification system for the importation of animals were introduced by revising the law. With this revision mammals and birds which are not the subject of animal quarantines are required the notification in case of the animal importation. Moreover, in this revision additional measures were put in place to deal with animals that were sources of infection.

(Slide 4)
Now, let me talk about rabies. The Japanese word for rabies is "kyokenbyo", which contains the character for "dog".

(Slide 5)
However it is a well-known fact that all mammals can be infected by the rabies virus. Usually, an animal develops the disease after receiving a rabid animal bite through the saliva. The disease develops in humans in many cases following a comparatively long incubation period of one to two months, while dogs exhibit a slightly shorter incubation period of between three and eight weeks. Also, once the symptoms have appeared, it is virtually impossible to save the infected person and animal. However, when humans are infected, although there is some risk of the infection spreading

from one person to another, such cases are very rare in practice. And when a rabid animal bites a person, the development of the disease can be prevented by means of a timely vaccination.

(Slide 6)
Let us look at the situation with regards to rabies in Japan. In 1949-50, there were comparatively large outbreaks of rabies in both humans and dogs. In response to this increased number of cases the Rabies Prevention Law was enacted in 1950. This contained strengthened measures to eradicate rabies in dogs and, as a result, no cases of rabies have been confirmed in Japan since 1957.

However, there have been cases of people who have been infected by rabies overseas and developed symptoms after returning to Japan. Such cases occurred in 1970 and in 2006.

(Slide 7)
Now, let us look at the measures taken based on the Rabies Prevention Law and how these measures are implemented. MHLW has responsibilities for management of the Rabies Prevention Law and local governments (prefectural and municipal level) carry out the actual measures to prevent infections in domestic animals. Under the law, dog owners are required to register their dogs with the local authority and to ensure that their animals receive a rabies vaccination, and required to put tabs on their dog. The prefectural authority carries out dog control activities. These activities include capturing and impounding stray dogs and returning them to their owners if the owners are identified, or, if the owners cannot be found, transferring them to an animal welfare organization if they are suitable for re-homing, etc. It is the prefectural authority that destroys those dogs whose owners cannot be found and that are deemed unsuitable for transfer.

Rabies controls are also implemented when dogs, cats and various other animals are imported into Japan. The animals are only allowed into the country after a period of quarantine which is carried out by the Animal Quarantine Service of the MAFF. This system is designed to ensure that only animals not at risk of carrying rabies are imported into Japan. However, if a case of rabies does occur in Japan, it is the responsibility of the local authorities to deal with it. The local authority can take a series of quite powerful measures such as ordering the isolation or confinement of animals that are infected or suspected of being infected by rabies. These are some of the countermeasures taken when rabies occurs in Japan.

(Slide 8)
This slide shows the rabies situation around the world. Japan is colored in blue because there haven't been any cases of rabies occurring here since 1957. But worldwide, rabies occurs in almost all countries, and there have been quite a lot of cases of people becoming infected, especially in such countries as China, the Philippines and India. As the current international distribution of commodities including animals is so active, we should be aware that there is always a risk of rabies entering Japan at any time.

(Slide 9)
As for preventing rabies from spreading, control of animals is important. In Asia, dogs are considered to be the most important animal. If wild animals that seldom come into contact with humans are infected with rabies, the risk of people becoming infected is comparatively small. But in the case that animals such as dogs, which live at close quarters with people, there is a considerable risk to people. Therefore dog owners are obliged by law to ensure that their animals receive a rabies vaccination injection. In this way, the authorities hope to prevent rabies outbreaks from occurring at all or at least prevent them from developing into an epidemic if the disease does re-enter the country.

(Slide 10)
This brings us on to border control measures. How are the applicable laws and regulations applied to rabies?

In the previously mentioned Rabies Prevention Law, provision is made for conducting inspection concerning these animals. Approximately 7,200 dogs and

approximately 1,800 cats were imported into Japan in 2010.

Moreover, under the Law Concerning the Prevention of Infectious Diseases and Medical Care for Patients of Infection (Infectious Diseases Control Law), bats monkeys and some other species of animals are prohibited from being imported.

Importers of mammals other than animals which are not the subject of animal quarantines are required to submit a health certificate that the animals being imported are not infected with rabies. According to these records, approximately 450,000 mammals were imported into Japan in 2010. However, many of these were rodents, a class of animals that is not at high risk of contracting rabies.

(Slide 11)
The MHLW has produced guidelines in order to mount an effective response in the event that rabies does occur. These guidelines were drawn up in 2001. They give a detailed outline of the steps required to move from suspicion to definite diagnosis in the event that an animal or person is suspected of being infected by rabies. We are now conducting research to formulate more advanced guidelines that will explain, for example, how to conduct an epidemiological investigation in cases where an owned dog in Japan is diagnosed with rabies.

(Slide 12)
This is a poster that we produced. In it, you can see part of an image of an old record. As the poster shows, rabies definitely used to exist in Japan and some people were infected. We should not forget that. We need to keep in mind that there might be an outbreak at any time, even after so many years.

(Slide 13)
This is what the MHLW says on its website about preventing rabies. Firstly, as rabies occasionally infects Japanese travelers abroad, it tells Japanese traveling overseas not to touch animals without reason. If you are bitten by a dog, etc., wash the wound and surrounding area with soapy water, have the wound inspected at a clinic or hospital and obtain treatment if required. Also, the Quarantine Stations can provide consultation in such cases, so please come forward and get a consultation upon your return to Japan.

(Slide 14)
Secondly, this is for dog owners. In the context of rabies prevention, dogs are important. We request owners to ensure that their dogs receive a rabies vaccination and that they register their dogs. We have to appeal to dog owners continuously to do these things.

(Slide 15)
So let me talk next about the broader subject of preventing infectious diseases. We commonly refer to the Infectious Disease Control Law by this, its simplified name.

(Slide 16)
The purpose of this law is to prevent the occurrence of infectious diseases and from spreading them. Regarding the measures employed to realize this aim, the government carries out the tasks written here. Firstly, the national government lays down the basic policy and the prefectural authorities draw up their own prevention plans based on this policy and implement measures accordingly.

So, how do we obtain a picture of the overall infectious disease occurrence situation? Medical doctors and veterinarians report cases of infectious diseases, which allow the authorities to grasp the situation and make official announcements if required. What sort of response do the authorities make to the information they receive? For example, if necessary, the authorities may ask patients to restrict their work or recommend hospitalization. Also, they carry out research in order to ascertain the actual cause of the infection. If the source of the infection is identified then they will take countermeasures against it. What is required may differ according to the type of disease, so the measures to be taken need be decided accordingly. I will explain more about this.

Regarding the provision of appropriate medical care for patients, in the case of diseases such as Ebola hemorrhagic fever (EHF), the patients are treated at a special hospital. Furthermore, animal import regulations are enforced.

(Slide 17)
The system carried out under the Infectious Disease Control Law consists of the measures listed here.

The main diseases are categorized into Category I to V infectious diseases and "Pandemic influenza and relevant infections". This circle shows the measures that can be taken for each disease type under the law.

Rabies, which I talked about earlier, and parrot disease (psittacosis) are both classified as Category IV infectious diseases. Let us see what countermeasures can be taken against these diseases under the law. We can sterilize the goods that may be sources of the infection as well as the places contaminated by the disease agents. But unlike EHF, these are not diseases that are transmitted from human-to-human. So restricting patients from working or recommending hospitalization cannot be enforced.

On the other hand, in the case of serious diseases that can be transmitted from human-to-human, such as Ebola, you can see many circles indicating what measures can be taken according to the law. There are a number of fairly strong measures that can be taken, including not only restricting patients from work or recommending their hospitalization, but also restricting their entering buildings or using public transport.

(Slide 18)
This figure shows how to grasp the occurrence of infectious diseases. I talked about the classification of infectious diseases in the previous slide. All cases of Category I to IV infectious diseases have to be reported. What this means is that the doctors who diagnose patients with these diseases are required to report each case to the health center. In turn, the health center reports the information to the local authority and from there it is passed on to the MHLW.

In practice, once the information is placed in the computer system at the local authority it can be viewed virtually instantaneously at the MHLW. Then the situation of the occurrence of the infectious diseases obtained in this way is shared with the public and with medical care institutions.

(Slide 19)
As for the animal import measures, I have already mentioned that there are import prohibitions and import notification obligations based on the Infectious Diseases Control Law. Among the import prohibitions, there are two patterns. The first pattern is not allowed without obtaining special permission of the MHLW and the MAFF. The second pattern is allowed in compliance with certain conditions, such as if the animal, which is limited to the monkey in the designated area, is placed in quarantine. The import notification obligations are aimed at mammals and birds. The notification of the animal importation is submitted together with the health certificate. This notification system has become a preventative measure against infectious diseases.

(Slide 20)
In implementing measures against infectious diseases of animal origin it is important for to cooperate with the organizations concerned, for example, the MAFF, the Ministry of the Environment (MOE), the Ministry of Economy, Trade and Industry, and the Ministry of Finance for animal importation matters. If an infectious disease outbreak occurs domestically, our Ministry takes steps to coordinate and cooperate with local authorities, and at concerned ministries such as the MAFF and the MOE, and we also cooperate with the relevant medical associations, and relevant veterinary associations if needed.

This slide shows the flow of cooperation using the real example of avian influenza. There is a committee called the Liaison Committee Among Ministries and Agencies. So when an actual outbreak of highly pathogenic avian influenza occurs the ministries concerned gather at the Cabinet Secretariat, share information, and decide on the countermeasures policy.

(Slide 21)
In order to take appropriate measures against infectious diseases it is necessary to gather scientific knowledge. So our Ministry is promoting research into such diseases by MHLW Grants.

This example takes infectious diseases of animal origin as its theme. A wide variety of studies are conducted and the scientific knowledge of infectious diseases of animal origin (such as capnocytophaga) is developed on the results of such research.

(Slide 22)
Guidelines are also developed as one of the results of the research. Regarding individual diseases we have developed guidelines on rabies, West Nile fever, chikungunya fever and so on. Other guidelines shown here are guidelines for zoonitic diseases for use in facilities that exhibit animals (such as zoos) and there are hygiene management guidelines for securing the hygiene of assistance dogs also.

(Slide 23)
Moreover, we introduce information about these and other cases in the style of a Q&A form about rabies, West Nile fever, capnocytophaga, tick-borne encephalitis, etc. In the Q&A we explain what kind of disease it is, how it is diagnosed, how it can be prevented, etc.

(Slide 24)
The handbook is produced for the general public and introduces general points that people should pay attention regarding infectious diseases of animal origin.

They are written here: -
-Wash your hands after touching an animal and wash your hands after touching the sand in a sandpit, or the soil in a park, or when gardening.
-Keep your contact with animals within reasonable bounds.
-Keep your surroundings clean. And since animal waste may contain agents of infectious diseases, dispose of it quickly.
-If you are keeping a bird indoors, be sure to ventilate the room sufficiently.
-As for wild animals, you should always assume that wild animals carry agents of infectious diseases so we should not touch them if at all possible.
-As for rabies, people are requested to respond by following the law.

(Slide 25)
There are many kinds of infectious diseases of animal origin and it is rather difficult to get a full grasp of them. For further information, there is a website under the National Institute of Infectious Diseases Infectious Disease Surveillance Center. This contains a variety of information on infectious diseases of animal origin. It may seem very academic but it will give you an idea of what the diseases are.

(Slide 26, 27)
For people traveling overseas, we produce leaflets like this middle one which is available within departure lounges. While abroad, even if you think a certain animal is really cute, and want to buy it, you will not be allowed to bring it back home. These pamphlets and posters have also been made to help people avoid unexpected infection of infectious diseases of animal origin.

(Slide 28)
Today I have tried to give you a rough explanation about the measures against
infectious diseases of animal origin that the MHLW deals with, and the research and information services we are involved in.

Thank you very much for your attention.

2012年2月18日（土）
神戸アニマルケア国際会議2012

我が国における動物由来感染症対策

厚生労働省健康局
結核感染症課
森田　剛史

【Slide1】

動物由来感染症とは

・Any disease or infection that is naturally transmissible from vertebrate animals to humans and vice-versa is classified as a **zoonosis** ・・・・・

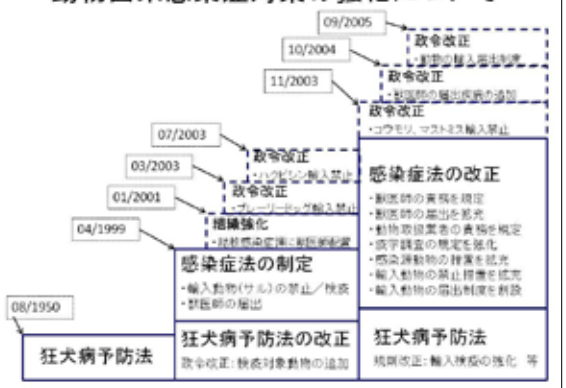
（出典：WHO HP　Zoonoses and veterinary public health (VPH)）

・人獣共通感染症

・人と動物の共通感染症

【Slide2】

動物由来感染症対策の強化について



【Slide3】

狂犬病対策について

【Slide4】

狂犬病の特徴

○ すべての哺乳類の動物が感染する、狂犬病ウイルスを原因とする感染症。

○ 通常は、罹患動物による咬傷の部位から、唾液に含まれるウイルスが侵入して感染する。

○ ヒトでは、多くは1～2ヶ月の潜伏期の後、発病する。（犬では、通常3～8週間）
発病後の有効な治療法がないため、発病すれば、ほぼ100%死亡する。
通常、ヒトからヒトに感染することはない。

○ 罹患動物に咬まれた場合の治療として、ワクチン接種等により発症を阻止する。

【Slide5】

日本での狂犬病発生の状況

近年では、

1870年：東京府下で狂犬病発生

1911年：東京で大流行
（年間3千頭以上）

1944年：患者46名、患畜（犬）733頭

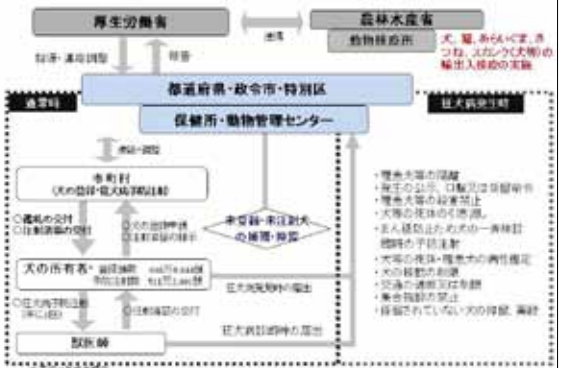
1970年：外国で感染された患者 1例

2006年：外国で感染された患者 2例

年	犬	ヒト	家畜（猫）
S18	1	0	0
S19	733	46	13 (7)
S20	94	1	19 (2)
S21	24	1	5 (1)
S22	37	17	1
S23	141	45	2 (1)
S24	614	76	2 (10)
S25	867	54	12 (29)
S26	319	12	18 (3)
S27	232	4	1
S28	176	3	4
S29	98	1	0
S30	23	0	0
S31	6	1	0
S32	0	0	(1)

【Slide6】

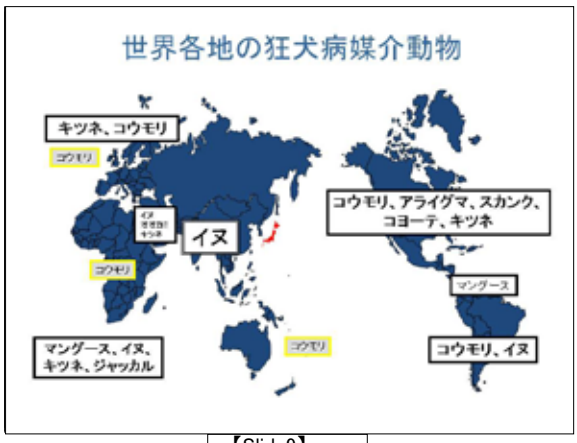
狂犬病予防法に基づく対応



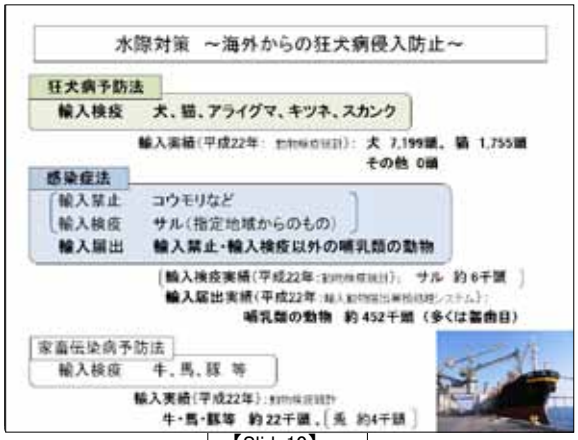
【Slide7】

狂犬病の発生状況

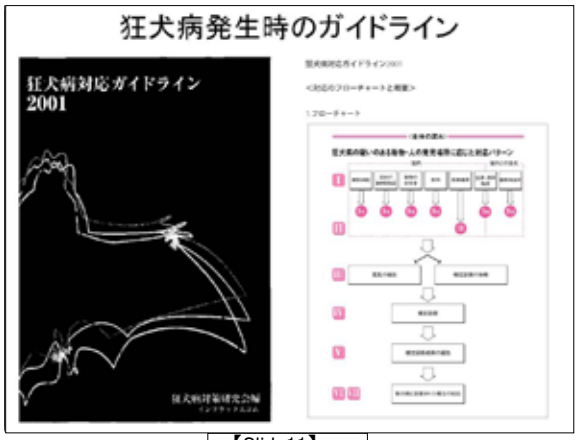
【Slide8】



【Slide9】



【Slide10】



【Slide11】

【Slide12】

狂犬病の予防のために①

○ 狂犬病流行地域に渡航される方へ
渡航中に狂犬病に感染しないよう注意！

- 滞在中にむやみに動物に手を出さないようにする
- 万が一、滞在中に犬等に咬まれた場合には、
  (1) すぐに傷口を石けんと水でよく洗う
  (2) 現地医療機関を受診し、傷の手当てと狂犬病のワクチン接種を受ける
  (3) 帰国時に検疫所（健康相談室）に申し出る

【Slide13】

狂犬病の予防のために②

○犬を飼っている方へ
以下は、犬の飼い主の義務となっています

- 市町村に犬を登録する
- 犬に狂犬病の予防注射を受けさせる（年1回）
  毎年4月から6月は狂犬病予防注射期間
- 犬に鑑札と注射済票を付ける

詳しくは、お住まいの市町村の窓口にお問い合わせ下さい。

【Slide14】

感染症法に基づく対策等について

【Slide15】

感染症の予防及び感染症の患者に対する医療に関する法律（感染症法）

【目的】
感染症の発生を予防し、そのまん延の防止を図る

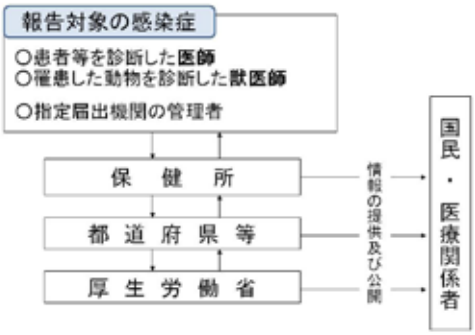
【手段】
（1）基本指針（国）、予防計画（都道府県）の策定
（2）感染症発生状況・動向の把握、公表
（3）感染症発生時の適切な措置（就業制限、入院、調査、ねずみ族、昆虫等の駆除等※）
※：疾病の分類等に応じて、とりうる措置が規定
（4）適切な医療の提供（感染症指定医療機関）
（5）動物の輸入規制
等

【Slide16】


感染症に対する主な措置等

【Slide17】

感染症の発生状況・動向の把握、公表



【Slide18】

感染症法に基づく動物の輸入規制

感染症の病原体を媒介するおそれのある動物の輸入に関する措置

【Slide19】

関係機関等との連携

- 輸入届出関連：関係省庁
  （農林水産省、環境省、経済産業省、財務省）
- 国内対策調整：地方自治体、関係省庁
  日本医師会、日本獣医師会　ほか
- 関連会議
  家畜や野生動物における鳥インフルエンザ等に関する関係省庁対策会議（内閣官房主催、関係13省庁）
  等

【Slide20】

調査研究

厚生労働科学研究費補助金
疾病・障害対策研究分野
感染症対策総合研究事業
新型インフルエンザ等新興・再興感染症研究

（平成23年度）
- 動物由来感染症のリスク分析手法等に基づくリスク管理のあり方に関する研究
- 海外から侵入が危惧される野生鳥獣媒介性感染症の疫学、診断・予防法等に関する研究
- ワンヘルス理念に基づく動物由来感染症制御に関する研究

等

【Slide21】

ガイドライン

○ 個別疾病
- 狂犬病対応ガイドライン
- ウエストナイル熱媒介蚊対策ガイドライン
- 犬のエキノコックス症対応ガイドライン
- チクングニア熱媒介蚊対策ガイドライン
- サルの細菌性赤痢対策ガイドライン等への対応

○ 動物展示施設における共通感染症対策ガイドライン

○ 補助犬の衛生確保のための健康管理ガイドライン

【Slide22】

Q&A

- 狂犬病に関するQ&A
- わかりやすい感染症Q&A（オウム病、つつがむし病等）
- ウエストナイル熱・脳炎Q&A
- 動物取扱業者のための野兎病Q&A
- ミドリガメ等のハ虫類の取扱いQ＆A
- 愛知県家きん農場における鳥インフルエンザ(H7N6)に関するQ＆A
- コリネバクテリウム・ウルセランスに関するQ＆A
- カプノサイトファーガ・カニモルサス感染症に関するQ＆A
- ダニ媒介脳炎に関するQ＆A

【Slide23】

【Slide24】

ご静聴ありがとうございました

【Slide28】

【Slide25】

【Slide26】

【Slide27】