Avian influenza virus - A Potential threat to falcons in the middle east

Dr. Margit Gabriele Muller MRCVS
Abu Dhabi Falcon Hospital

In recent months there have been increasing reports of Avian flu in both wild and captive birds in Asia. This raises a number of concerns for people working with birds of prey both in the wild and in captivity. The Association of Avian Vets (2005) has attempted an overview of the transmission routes of the disease in captivity, and what can be done to halt the disease, but their emphasis, naturally, is on birds in captivity, not wild ones. Avian flu in wild birds can have quick and devastating effects. In May 2005 about 150 Bar-headed geese died on migration at Qingai Lake in China. A wild peregrine also died in China last year and it seems reasonable to suppose that raptors eating prey birds with flu risk contracting it themselves. Symptoms in poultry include: depression, running nostrils and eyes, shortness of breath or wheezing, and green urates. In poultry the incubation period is 3-14 days (Swayne and Halvorson, 2003).

It is caused by an orthomyxovirus with different strains and pathogenicity. The H5 and H7 serotypes are highly virulent and contagious causing up to 90% mortality. The highly virulent H5N1 strain has been found in the outbreaks in East Asia, not only in several poultry species (including quail), but also in falcons (Manvell et al. 2000) and ducks. This is the strain that caused the outbreak of Hong Kong flu in humans. Currently several virus strains are undergoing mutation thus making the virus more dangerous both for humans and for some bird species normally immune to it. The main problem is that it cannot be predicted whether, when or how a strain will make a mutation. In 1999 a previously low pathogenic strain H7N1 mutated after 9 months and caused the death and destruction of 13 millions birds in Italy. A similar outbreak with an originally low pathogenic strain H2H2 started in 1992 in Mexico and could not be controlled until 1995.

The main transmission routes are through fecal material and respiratory secretions. As well as bird-to-bird transmission, humans can carry the disease on contaminated hands or equipment.

Diagnosis and control

The differential diagnosis list for avian influenza should include PMV-1, infectious laryngotracheitis, Chlamydophila sp., Mycoplasma spp. and other respiratory and gastro-intestinal pathogens (Swayne and Halvorson, 2003). In poultry there may be concurrent infection with other viruses and bacteria, such as Mycoplasma spp. and even E. coli . Either blood or swabs from the cloaca and upper respiratory tract are suitable for virus isolation from live birds. Liver, trachea, lungs, spleen and brain are the best organs to sample from dead birds. Paired samples (acute and convalescent) are needed to confirm an infection. A specific Avian Flu ELISA test is currently being trialled at the Abu Dhabi Falcon Hospital to provide a specific diagnosis.

Presently no specific treatment exists for infected birds and in the future it may be necessary to develop vaccines from isolated strains of influenza. Amantadine has been shown to experimentally reduce mortality in poultry, but its use rapidly gives rise to amantadine resistant viruses (Swayne and Halvorson, 2003). All methods for controlling the spread of this disease in poultry are based on surveillance measures, preventing contamination and controlling the movement of people.

Apart from the report by Manvell et al (2000), the disease has only been reported in bustards in the Middle East. Wernery et al (2001) described an outbreak of influenza A subtype H9N2 in houbara bustards imported into Dubai from Pakistan. Clinically the bustards showed anorexia, lethargy, opisthotonus, head ticking, ocular and nasal discharges and a severe dyspnoea that was characterised by a snoring

sound. Pseudomonas aeruginosa, Clostridium perfringens and PMV-1 were also isolated and these agents may have contributed to both the symptoms and the high mortality (21 of 22). Wernery et al (2001) experimentally infected two houbara bustards with the isolate and both birds showed the same clinical signs and died after 3 days.

As wild houbara live at very low densities it is likely that they have little exposure to avian flu and that they only contract it once in captivity by contact with other birds. There is a significant risk of illegally smuggled houbara contacting infected birds and thus transmitting it to trained falcons.

Risk assessment

Clearly the main reservoirs and transmission routes are where any birds are kept in close proximity such as the poultry industry (Capua and Alexander 2004). In wild birds the risks are highest in flocking species such as waterfowl exposed to faecal contamination and to raptors that prey on sick birds. Steps need to be put in place to break these transmission routes by import controls, quarantine and frequent monitoring of flocks both in captivity in the wild. In 2004 the EU suspended trade in exotic birds including raptors, from several Asian countries, but where there is uncontrolled trade in wild birds into the Middle East, especially via intensive housing with middlemen, then cross-contamination can occur in species that would normally have little exposure to it in the wild.

Avian flu can mutate and infect man (Alexander 2005). For field biologists, this means taking care when handling sick birds, and obtaining specimen material for analysis in the lab. For falconers the main risk is probably not that their falcon has avian flu on arrival, but that it may pick it up from an infected quail or poultry or from a sick prey bird. Only safe food from screened sources should be used and any falcon showing symptoms should be immediately isolated not just from other birds, but from humans as well. Falconry is an occupation in which humans are in close proximity to birds, and in confined spaces such as cars.

The problem needs to be tackled from different angles to reach an effective Avian Influenza virus prevention network. Major disease prevention solutions comprise:

- Establishment of suitable quarantine facilities at airports, customs and centers receiving confiscated birds.
- Establishment of quarantine/hygiene protocols.
- Establishment of a small working group of veterinarians, Ministry officials, etc to establish a task force for a potential disease outbreak.
- Routine screening of all imported falcons and other birds species for Avian Influenza virus.
- Routine screening of large bird markets, farms.
- Training of staff working with birds.
- Liaising with field biologists to sample wild birds.

Conclusion.

A possible spread of Avian Influenza virus in falcons in the Middle East cannot be ruled out and should be seriously considered. A disease prevention programme should be established and quarantine measures should be implemented. Steps should be taken for field biologists and vets to link up in order to monitor wild birds. Our protocols for disease monitoring of wild raptors could be improved.

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فيروس إنفلونزا الطيور – خطر كامن يتهدد الصقارة في الشرق الأوسط

طبيب بيطري/ مارجيت جابرييل مولر (عضو الكلية الملكية للجراحين البيطريين)

لا تشكل المشكلات الناجمة عن إنفلونزا الطيور خطراً يتهدد الطيور الداجنة والبرية في بلدان آسيوية عدة فحسب بل وتتعداها حتى تمثل عامل خطر لإصابة الإنسان به – عاملاً يتسم بشدة وطأته رغم عدم تقديره التقدير اللائق - نظراً لإمكانية الانتقال وتحول الفيروس. وتعتبر الطيور المهاجرة والتدخلات البشرية مستودعاً كبيراً للمرض. وقد تم الإبلاغ في الآونة الأخيرة القريبة عن حالات إصابة صقور شاهين بإنفلونزا الطيور في الصين. وبسبب الخطر المحتمل من جراء انتقال هذا النوع من الإنفلونزا عن طريق استيراد و/ أو الاتجار في (أو إمرار) صقور الشاهين البرية في بلدان الشرق الأوسط يجب أخذ هذا الخطر بأيما جدية شديدة، لاسيما مع احتمال انتقاله إلى الإنسان.