

AVIAN INFLUENZA. EVOLUTION DURING THE LAST YEARS

ADINA ATASIE

CFR Hospital of Sbiu

Abstract: Avian influenza has become a possible threat to global health in recent years. The danger is the transmission mechanism of obscure and therefore difficult approach and prevention.

Keywords: avian flu, evolution, confirmed case

Rezumat: Gripa aviară a devenit în ultimii ani o posibilă amenințare pentru sănătatea populației globului. Pericolul îl reprezintă mecanismul de transmitere puțin cunoscut și prin urmare dificultatea abordării și a prevenției.

Cuvinte cheie: gripă aviară, evoluție, caz confirmat

Avian flue is a type of influenza that affects mainly the birds, but it may also infect mammalian species. It was identified for the first time in the 90's, but it was found later all over the world. A virus of the avian influenza, H5N1 was detected in Asia in 1997 and created panic in the entire world. In October 2005, the virus H5N1 reached Romania, as well, being identified in the birds of the village of Ceamurlia de Jos, the county of Tulcea. Romania was the first European country where the presence of this virus was officially confirmed.

Since the first contaminations through direct contact (bird-human) in Hong Kong in 1997, a significant number of infections and deaths was reported in Southeastern Asia. The increased rate of mortality is explained by the lack of a human immunity system "specialized" in order to counteract this virus. Without a virus contact history, the risk of exposure and death is very high in humans. A person who is suffering from influenza and enters in a close contact with a bird infected with avian influenza is likely to contact the disease, being infected with this virus. These two viruses which met in the same host organism may be capable of exchanging genetic material, and the resulting new virus may be freely transmitted from person to person without obstacles. Yet, there is no evidence that the avian influenza could be transmitted from person to person, the scientists saying that the genetic exchange has not taken place yet.

The natural source of the avian influenza is the migratory birds, especially the wild ducks, which are the

most resistant to infections. In the absence of prompt control measures supported by a good surveillance, the epidemics may last for years.

Routes of transmission of the avian influenza.

For now, the only method of transmission is from bird to human, in the case in which the person enters into direct contact with the biological liquids or inhales the dust of the faces of the sick birds. According to the information had up to the present, the virus cannot be transmitted by fowl food (cooked or boiled accordingly). Yet, the authorities recommend those who intend to travel in the Eastern affected countries to avoid the markets which trade birds.

Symptoms of the avian influenza. In humans, the symptoms are relatively specific – sudden outburst, fever above 38°C, cough, dysphagia, dyspnoea, conjunctivitis – in serious cases, even pneumonia with acute respiratory insufficiency.

Taking into account the evolution particularities of the A/H5N1 circulating virus (occurrence of structural changes) according to the epidemiological situation, changes in the case definition may occur.

Clinical case definition includes sudden outburst, fever $\geq 38^{\circ}\text{C}$, dysphagia, dyspnoea, cough in epidemiological context.

A Possible case may require: immediate nominal declaration, urgent and compulsory investigation and hospitalization, sudden outburst, fever $\geq 38^{\circ}\text{C}$, dysphagia, dyspnoea, cough in epidemiological context:

- One or more of the following situations/conditions:
 - contact with a confirmed case of avian influenza A/H5 in the maximum contagious period (a day before the debut of the symptomatology plus 7 days more from the beginning of the confirmed case) 7 days before the debut of the symptomatology;
 - contact with birds (including chickens) that have died for unknown reasons 7 days before the debut of the symptoms;
 - laboratory personnel who process the samples taken from the animals or persons suspected of

ESSAYS

having been infected with highly pathogenic avian influenza virus strain;

- rapid positive test for the type A influenza virus;
- death caused by an acute uncertain respiratory affection;
- one of more of the following situations:
 - person residing in an area where highly pathogenic avian influenza virus strain was suspected or confirmed.
 - contact with a confirmed case of A/H5 avian influenza in the period of maximum contagiousness*) 7 days before the debut of symptoms.

*Maximum contagiousness is registered between the last day before the debut of symptomatology and 7 days afterwards.

Probable case: refers to any person who presents:

- the clinical context of the possible case: fever (temperature $\geq 38^{\circ}\text{C}$) and one or more of the following symptoms: sudden outburst, dyspnoea, dysphagia, cough;
- +/- clinical alterations of the respiratory system (auscultation and radiography);

- The exposure context is similar with the suspected case: rapid tests (directigen, ELISA) for the A influenza, positive.

Confirmed case: is valid for the person who presents:

- clinical context of the probable case;
- context of exposure similar with the probable case:
 - rapid tests for A/H1N1, A/H3N2, A/H5N1 influenza and B flue (IF with monoclonal antibodies and RT-PCR) directly from the pathological product;
 - cell-culture isolation (MDCK) and identification through IF (monoclonal antibodies) or HI;
 - Laboratory investigations for A/H5 may be performed in the following situations, as well: per persons deceased and within a target epidemiological context.

Measures:

1. Immediate hospitalization of the patient;
2. Immediately reporting any possible case.

Evolution of the avian influenza. Between 2003-September 2008, a decrease of the confirmed cases was registered, as against the years 2005, 2006, 2007. (Table no. 1)

Table no. 1. Evolution of the cases of A/(H5N1) avian influenza cases, reported to WHO, 10 September 2008.

Country	2003		2004		2005		2006		2007		2008		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	0	0	7	7
China	1	1	0	0	8	5	13	8	5	3	3	3	30	20
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	7	3	50	22
Indonesia	0	0	0	0	20	13	55	45	42	37	20	17	137	112
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	2	2
Birmany	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	12	4
Vietnam	3	3	29	20	61	19	0	0	8	5	5	5	106	52
Total*	4	4	46	32	98	43	115	79	88	59	36	28	387	245

*The total number of cases includes the number of deaths and refers only to the cases confirmed in laboratories.

Therapeutic conduct in avian influenza.

The drugs used in the treatment of the human avian influenza could be useful. The mortality rate in the avian influenza is very high, reaching even 50%. Since 1997, only few local epidemics have been reported.

Antivirus therapy.

CDC and WHO recommend Oseltamivir to treat and prevent the human infection with avian influenza.

The analysis of the H5N1 virus strain sensitivity, circulating all over the world suggests that most of the

viruses are sensitive to Oseltamivir. Although, there is evidence regarding the resistance to Oseltamivir, which was reported in some of H5N1 human viruses but in isolated cases.

Monitoring the resistance antiviral treatment regarding the avian influenza viruses is very important and in course of being developed.

Measures for preventing the avian influenza virus infection in humans. These are addressed to the people who work with poultry and are responsible for the avian influenza focuses regarding the poultry and, as a result of this, are exposed to the contact with infected poultry. They are advised to observe the recommendations of biosecurity and of infection, as well as to use the individual protection equipment. The exposed people should be carefully monitored in order to detect the symptomatology that develops 7 days after the last exposure to infected poultry or to environments possibly contaminated by avian influenza.

Measures for preventing transmission

- Anti-influenza vaccination;
- Washing the hands with water and soap, especially after the contact with birds, and in the absence of water and soap, the hands could be washed with sanitary alcohol;
- Children must be permanently supervised;
- Observing the measures imposed by authorities regarding the movement of animals and people;
- Only the food (fowl, eggs and poultry products) coming from safe sources will be consumed;
- Avoid areas where birds infected with avian influenza were detected;
- The veterinary surgeon will be informed about any case of illness or death in birds in general;
- The direct contact with dead birds is forbidden.

Food preparing measures

- The raw meat should be separated from that thermally processed or from ready made food products;
- Do not use the same knife or cutting instrument in order to cut the raw food and the ready made food products;
- Wash the hands between the operations of handling the raw products and those thermally processed;
- All products coming from poultry, including eggs and blood should be carefully thermally processed;
- Before manipulating the eggs, these have to be washed with water and soap. Afterwards, wash your hands with water and soap;
- Do not use raw or soft-boiled eggs in food that will be not processed thermally;
- After touching the poultry and the raw eggs, wash your hands with water and soap, as well as all the instruments used.

BIBLIOGRAPHY

1. Department of Health and Human Services, Centres for Disease Control and Prevention, Avian flu, Report. May 2008.
2. ECDC. Avian influenza portfolio: Collected risk assessments, technical guidance to public health authorities and advice to the general public. Technical Report. Stockholm, June 2006.
3. Epidemic and Pandemic Alert and Response, WHO report, 10 Sept. 2008.
4. Ord. MS nr. 31 din 12 ianuarie 2006 pentru aprobarea Metodologiei de supraveghere a cazurilor de gripă aviară la om.
5. Swayne DE, Kapczynski D. Strategies and challenges for eliciting immunising against influenza virus in birds, Immunol Rev Oct 2008, 225(1).
6. Vijaykrishna D, Bahl J, Riley S, Duan L, Zhang JX, Chen H, Peiris JS, Smith GJ, Guan Y. Evolutionary dynamics and emergence of panzootic H5N1 influenza viruses, PLoS Pathog. 2008 Sep 26;4(9).