Avian influenza in the Mopti region, Mali

Molia S[1*], Traoré A[2], Gil P[3], Hammoumi S[3], Lesceu S[4], Servan de Almeida R[3], Albina E[3], Chevalier V[5]

[1] CIRAD, UPR AGIRs, Bamako, Mali; [2] Laboratoire Central Vétérinaire, Bamako, Mali; [3] UMR CIRAD-INRA Contrôle des Maladies, Montpellier, France; [4] IdVET, Montpellier, France; [5] CIRAD, UPR AGIRs, Montpellier, France; *Correspondence: sophie.molia@cirad.fr

INTRODUCTION

The inner delta of the Niger river: a hub for AIV circulation?

- HPAI H5N1 first reported in Africa in February 2006 with outbreaks in 8 countries within 3 months
- Inner delta of the Niger river (IDN) in the Mopti region of Mali = interesting surveillance zone: 2nd largest wetland in Africa and winter habitat for millions of migratory wild birds
- Survey by Gaidet et al (2007): avian influenza viruses (AIV) detected among 3.8% of 692 wild aquatic birds sampled in the IDN
- Contact common between wild birds and free-ranging backyard domestic poultry, especially along Niger river and near ponds

⇨ **Objective: investigate whether AIV also circulate in domestic poultry**

METHODS

Serological & virological survey in backyard poultry…

Sample collection in backyard domestic poultry of the Mopti region

- In February 2007 = when large numbers of palearctic migratory birds are present in IND
- In 6 villages selected because located near Niger river (n=5) or a pond (n=1)
- In convenience sample of birds (n sufficient for detection if prevalence ≥ 10%)
- Collection of tracheal swab, cloacal swab, and blood from each bird

Laboratory analyses

- Real-time reverse transcription PCR (rRT-PCR) for type A influenza viruses (IVA)
- If positive rRT-PCR for IVA: rRT-PCR specific for H5 and H7 subtypes, and virus isolation
- Commercial ELISA kit (FluA, IdVET) for detection of antibodies against IVA

RESULTS

… finds evidence of AIV circulation

	rRT-PCR for IVA		ELISA for antibodies against IVA		
	Negative	Positive	Negative	Doubtful	Positive
Duck	127	7 (5.2%)	85	4	19 (18.3%)
Chicken	85	1 (1.2%)	72	1	7 (8.9%)
Guinea fowl	3	0 (0.0%)	2	0	0 (0.0%)
Female	148	5 (3.2%)	104	3	18 (14.9%)
Male	67	3 (4.3%)	55	2	8 (12.7%)
Young (<6 months)	31	0 (0.0%)	26	0	2 (7.1%)
Adult	184	8 (4.2%)	133	5	24 (15.3%)
All birds	**215**	**8 (3.6%)**	**159**	**5**	**26 (13.7%)**

- 223 birds sampled: 3.6% ⊕ by rRT-PCR for IVA and 13.7% ⊕ by ELISA
- None ⊕ by rRT-PCR for H5 and H7 or by virus isolation
- No significant difference among species, sex or age for the proportion of birds ⊕ by rRT-PCR for IVA or the proportion of birds ⊕ by ELISA
- Odds of having a ⊕ versus ⊖ rRT-PCR for IVA significantly greater (OR=6.8; p=0.037) for sero⊕ birds (3/23) than for sero⊖ birds (3/156)

DISCUSSION

- This is the 1st report of AIV in domestic poultry in Mali
- No virus isolate obtained but ⊖ rRT-PCR for H5 and H7 orientate towards low pathogenic AIV strains
- Proportion of sero⊕ birds found = 1st but very biased estimate towards individual AIV seroprevalence in African backyard poultry
- Bias stems from non-random sampling and non-use of confirmatory serological tests
- Further studies needed to assess temporal evolution of AIV circulation in Mopti region and eventual correlation with presence of wild birds

Acknowledgments: We thank the French Ministry of Foreign Affairs for funding this work, the laboratory IdVET for providing the FluA ELISA kits, the Direction Nationale des Services Vétérinaires and Direction Régionale des Services Vétérinaires de Mopti for facilitating field investigations