Zoonoses and Food Hygiene News

Vol. 19 No. 2 April to June 2013 ISSN: 2091-0932 (Print), 2091-0940 (Online) Government of Nepal, Registration Number: 148/049/050

This Issue has been Supported by International Development Research Centre (IDRC), Ottawa, Canada

Email: *ddjoshi.nzfhrc17@gmail.com, ddjoshi@healthnet.org.np,*
Website: *www.nzfhrc.org.np*

Zoonoses and Food Hygiene News, published four times a year, provides a medium for disseminating technical information on matters related to zoonoses and food hygiene generated in the world, particularly in Nepal. The editors welcome submissions on these topics with appropriate illustrations and references. The views and opinions expressed in the News are those of the authors.

CONTENTS:

A Case Control Study of Classical Risk Factors of Japanese Encephalitis

S. Chaulagain, D.D. Joshi, S. Dhakal, D.K. Pant, Y. Shah

Introduction

Japanese encephalitis is a mosquito borne viral disease which is transmitted predominantly by *Culex tritaenorhyncus* (Broom et al., 2003). It is a disease with great public health concern due to high morbidity and mortality associated with it (Solomon, 1997). Rice cultivation and pig farming are two major classical risk factors for JE outbreaks in temperate and tropical Asian regions (Halstead and Jacobson, 2003). This is because *Culex tritaenorhyncus* prefers rice fields (Richards *et al*., 2010) and domestic pigs act as amplifying hosts.

JE is one of the top prioritized zoonotic diseases in Nepal. It is highly endemic in southern Terai of Nepal where extensive rice cultivation is practiced and pig husbandry is the popular economic practice of these resource poor farmers. The objective of this study was to evaluate the association between the JE case and specific risk factors, viz: i) presence of household pig, and ii) presence of paddy field in less than 2km distance from pig raising area. .

Methodology

This study was conducted during Monsoon period (July to September) of 2012 in four districts of Nepal viz. Kathmandu, Morang, Kapilvastu and Rupandehi. Cases was defined either as a clinical Acute encephalitis syndrome that has presence of JE virus specific IgM antibody in a single sample of serum as detected by IgM- capture ELISA specifically for JE virus or those patients who had AES syndrome or JE like syndrome screened by rapid and confirmed by anti JEV IgM ELISA.

Based on physician assessment, patients visiting same hospital without AES syndrome but characteristically similar to cases in terms of age (±5years), gender, geographical areas were selected; screened by rapid test (standard diagnostic inc, korea) and subsequently confirmed by anti JEV IgM ELISA. Rapid and anti JEV IgM ELISA negative patients were selected as control. Case and control were matched in the ratio of 1:1. A total of 42 cases and 42 controls were selected.

A standard questionnaire form was developed and training session was held for Paramedics. The questionnaires were administered among the patients. Non parametric test and risk factors were analyzed by Epi-info software package.

Result:

A total 260 patients were enrolled in the study from the selected hospitals/clinics of four districts of Nepal. Among them, 202 (76.69%) were AES and 58 (22.30%) were non AES cases. A total of 83.33% (35/42) of the cases were living within 2 Km distance from rice/paddy ecosystem while 71.43% (30/42) of controls were living within that distance from rice/paddy fields and 14.29% (6/42) of the cases were living within 2 Km distance from pig farming while 4.76% (2/42) of controls were living within that distance from pig farming. This study also showed that 57% (24/42) of the cases had household pig farming while 45% (19/42) of controls had household pig farming.

The study showed that there is no significant association between rice/paddy field<2 Km and JE occurrence (p>0.05) but JE patients are more likely to be related to paddy field <2Km (OR 2, 95% CI 0.62-6.76). JE patients were more frequently associated with household pigs (OR 1.61, 95% CI 0.63-4.18) than controls.

Table 1. Risk Factors associated with JE

Parameters		Case	Control	CI	OR	P
Rice/Paddy field <2 Km	Yes	35	30	0.69–6.76	2	0.19
	No	7	12			
Pig farming < 2 Km	Yes	6	2	0.54-35.33	3.33	0.37
	No	36	40			
Household pig	Yes	24	19	0.63-.18	1.61	0.27
	No	18	23			

Discussion

There is a possibility that the patients presented with JE could have IgM antibodies co-incidentally detected in serum as a result of a subclinical JE infection but have encephalitis due to other causes (Solomon and Vaughn, 2002).

This study showed that rice/paddy field in less than 2 Km from human dwellings are not significantly associated with cases. This might be due to small sample size. In a case control study conducted in Bali from 2001 to 2004 with 94 serologically confirmed JE cases and 163 encephalitis patients (without JE), multivariate analysis identified proximity to rice fields (OR 2.93, 95% CI 1.57–5.45), pig ownership (OR 2.24, 95% CI 1.17–4.26), and older age (OR 1.21, 95% CI 1.09–1.33) as being independently associated with the risk of JE (Liu *et al.,* 2010). In our study household pigs in less than 2 km

A newsletter published by National Zoonoses and Food Hygiene Research Centre (NZFHRC)
Mailing address: G.P.O. Box: 1885, Kathmandu, Nepal. Phone +977-1-4270667, Fax: +977-1-4272694,
Email: ddjoshi.nzfhrc17@gmail.com, ddjoshi@healthnet.org.np, **Website:** www.nzfhrc.org.np

from household showed no significant difference between the cases and control but it is more likely associated with the cases. JE outbreak on Badu Island near Australia was linked to the presence of domestic pigs and high mosquito populations in close proximity to humans (Ritchie *et al*., 1997).

In our study, rice/paddy field, classic risk factor, was not statistically significant. This might be due to changing pattern of JE occurrence as it has been observed in Kathmandu and other hilly regions (Bhattachan *et al*. 2009). Pig farming, another classical risk factor, was not significantly associated with JE cases Several other studies have reported JEV transmission in regions where there is a relatively small number of pig population or where pigs are not raised (Konishi *et al*., 2009).

Conclusion:

This study showed that classical risk factors like nearness to rice/paddy field, nearness to pig farming and presence of household pigs showed no significant differences between two study group but they were more likely related to JE case. This study shows that there is necessity of further research regarding the epidemiology of the disease in context of Nepal for effective control program.

References:

Bhattachan, A., S. Amatya, T. R. Sedai, S. R. Upreti, and J. Partridge. 2009. Japanese encephalitis in hill and mountain districts, Nepal. Emerg. Infect. Dis. 15: 1691–1692.

Broom, A.K., D.W. Smith, R.A. Hall, C.A. Johansen and J.S. Mackenzie. 2003. Arbovirus infections. *In:* Cook, G., Zumla, A. (eds). Manson's Tropical Diseases. (21st ed.) Saunders, London, pp 725–764.

Halstead, S.B. and J. Jacobson. 2003. Japanese encephalitis. Adv. Virus Res. 61: 103–138.

Konishi, E., Y. Sakai, Y. Kitai and A. Yamanaka. 2009. Prevalence of antibodies to Japanese encephalitis virus among inhabitants in Java Island, Indonesia, with a small pig population. Am. J. Trop. Med. Hyg. 80: 856– 861.

Liu, W., R.V. Gibbons, K. Kari, J.D. Clemens, A. Nisalak, F. Marks and Z.Y. XU.2010. Risk factors for Japanese encephalitis: a case-control study. Epidemiol. Infect. 138: 1292–1297.

Richards, E.E., P. Masuoka, D. Brett-Major, M. Smith, T.A. Klein, et al., 2010. The relationship between mosquito abundance and rice field density in the Republic of Korea. Int. J. Health. Geogr. 9: 32.

Ritchie, S., A. Vand den Hurk and J. Shield. 1997. The 1995 Japanese encephalitis outbreak: why Badu? Arbovirus Res. Aust. 7:224-227.

Solomon, T. 1997. Viral encephalitis in Southeast Asia. Neurol. Infect. & epidemiol. 2: 191-199.

Solomon, T. and D.W. Vaughn . 2002. Pathogenesis and clinical features of Japanese encephalitis and West Nile virus infections. Curr. Top. Microbiol. Immunol., 267:171-94.

Knowledge and Practices of Livestock Farmers Regarding Brucellosis in Kailali District, Nepal

-Yagya Raj Pandeya[1] and DD Joshi[2]

[1](B.V.SC. & A.H., IAAS, TU, Nepal) [2]NZFHRC, Kathmandu,

Correspondence: yagyarajpandeya@gmail.com

Abstract

Brucellosis is a major public health problem in both developed and developing countries including Nepal. It is transmitted by the contact of infected animals or by consuming contaminated products. Due to the dearth of research conducted on the brucellosis in Nepal, the study was conducted to assess the knowledge, attitude and practices of farmers regarding to brucellosis in Kailali district. A total 75 respondents were enrolled in the interview, Out of 75, 1 (1.33%) farmer had brucellosis knowledge, out of 50, 14.67% farmers consumed raw meat and 50.67% farmers had poor hygiene practice. This finding indicate that there is high chance of transmission of brucellosis from animals to human and mass awareness program is needed to reduce the possible public health hazard of brucellosis in the district.

Introduction

Brucellosis is one of the most widespread zoonotic disease in the world and the infection is almost invariably transmitted to people by direct or indirect contact with infected animals or their products. The annual occurrence of human brucellosis in the world is more than 500,000 cases (Pappus *et al*., 2006; Rust and Worrel, 2009).

It is acquired in people through breaks in the skin following direct contact with infected animal's tissues or blood or their secretions. Infection may also result from consumption of contaminated unpasteurized milk and milk products (Georgiou *et al.,* 2005). Generally poor hygiene, prevalence of the disease in animals and practices that expose humans to infected animals or their products influence the occurrence of the disease in humans (Schoonman 2007; Swai and Schoonman 2009).

In many developing countries, including Nepal, a high proportion of the population resides in rural areas where agriculture is the main source of their livelihood. Furthermore, a sizeable proportion engages in livestock production, resulting in a high level of contact with animals and increased risk of zoonotic infection. Therefore, adequate knowledge of the transmission of domestic animal brucellosis is of great public health importance, particularly amongst livestock farmers. This will greatly assist in mapping out strategies for its control amongst the general public.

Methodology

This study was conducted from November 2012 to January 2013 in the Dhangadhi municipality, Kailali district, Nepal. This district was selected because no brucellosis related study was conducted in this district although our country is known to be in high risk of brucellosis. Total 75 farmers were selected randomly for a questionnaire survey. The questionnaire focused on: (i) respondent attributes such as gender and education, (ii) knowledge about brucellosis (cause, transmission and symptoms in animal and human), (iii) habit of animal product consumption and handling, and (iv) preventive measures applied against brucellosis in animals. The questionnaire contained both open and closed ended questions. All questions were coded and entered into SPSS software version 16 for analysis.

Result

There were 41 male and 34 female farmers in our study group. The education level of farmers varied from 27% illiterate, 36% with primary education, 24% with secondary education and 13% respondents with college education. Thirty eight farmers were between 20-40 year of age and 37 were 40 year or older.

Only 1.33% (1/75) respondent had heard about brucellosis and 98.77% (74/75) had no knowledge about brucellosis. No one had vaccinated their animal against brucellosis.

Table 1: Risk practices of consumption of milk, meat and handling of animal products

Risk factors	Raw	Percentage
Milk consumption	1	1.33%
Meat consumption	11	14.67%
Handling of other animal products	Poor 38	50.67%

Regarding the practice of boiling of milk prior to consumption, 1.33% consumed raw milk (unboiled) and 98.77% consumed boiled milk.14.67% farmers consumed raw meat (uncooked) and 85.33% consumed cooked meat. 50.67% farmers have poor hygienic practices. They did not use any protective measure like gloves during handling of placenta or aborted fetus.

Discussion

Our findings reveal that only 1.33% of respondent have knowledge about brucellosis and rest 98.67% have no knowledge on brucellosis in respect to its causes, symptoms and mode of transmission, particularly from animals to humans. Only one person having knowledge of brucellosis in survey was a veterinary technician. This can be said that he had knowledge because of his education. General farmers were devoid of this knowledge in the district. This lack of knowledge is of great importance, particularly when the zoonotic nature and the public health significance of brucellosis are considered.

Furthermore, improper eating habits and poor hygienic practices of farmers also indicate high chances of transmission of brucellosis to humans since 12% animals in Kailali district have been reported to be seropositive (Pandeya *et al*., 2013). Therefore, there is a need for more public health awareness programs, as well as implementation of brucellosis control measures in the animal populations.

Acknowledgement

We would like to acknowledge all the farmers of Kailali district who helped in this survey. Similarly we very much thankful to Mr. Krishna Joshi, Lok Raj Pandeya, Bhupendra Bhatta and Lokendra Pandeya for their support in survey. Last but not the least our sincere thanks goes to all the staffs of National Zoonoses and Food Hygienic Research for their help in questionnaire preparation and survey methodology development.

References

Georgiou P, Nicholas A, Mile B. & Epameinondas T. 2005. Brucellosis. *New England Journal of Medicine* 352, 2325–2336. http://dx.doi.org/10.1056/NEJMra050570, PMid:15930423.

Pandeya YR, Joshi DD, Dhakal S, et al. 2013. Seroprevalence of brucellosis in different animal species of Kailali district, Nepal. Int J Infect Microbial 2013;2(1);22-25.

Pappas G, Papadimitriou P, Akritidis N, Christou L. & Tsianos EV. 2006. The new global map of human brucellosis. Lancet Infect Dis;6:91–9. Available from: http://www.thelancet.com/journals/laninf/article/PIIS1473-3099%2806%2970382- 6/fulltext Accessed: April 4, 2010.

Rust R. & Worrel TE. 2009. Brucellosis. Available at: http://www.emedicine.com/neuro/topic42.htm accessed: 20.06.2009.

Schoonman L. 2007. 'Epidemiology of leptospirosis and other zoonotic diseases in cattle in Tanzania and their relative risk to public health', PhD thesis, Department of Veterinary Medicine and Public Health, University of Reading.

Swai ES. & Schoonman L. 2009. Human brucellosis: Seroprevalence and risk factors related to high risk occupational groups in Tanga Municipality, Tanzania. *Zoonoses and Public Health* 56, 183–187. http://dx.doi.org/10.1111/j.1863-2378.2008.01175.x, PMid:18811674.

Bird Flu (Influenza) Virus Outbreak Threat in Poultry Industry of Nepal

Bird flu (Avian Influenza, AI) outbreaks in poultry have been recorded and reported but there is no human case recorded so far in Nepal. In addition to this, there is no human to human transmission recorded so far in Nepal. In the months of April and May 2013, AI virus was recorded, diagnosed positive and reported from 7 districts of Nepal. The following table lists the AI outbreaks and economic losses to the farmers due to recent outbreaks in Nepal.

Table 1: Bird flu outbreaks during the month of April to May 2013 in Nepal

Date of out break	District	VDC	# of Outb reak	Birds killed	Eggs destro yed
3rd April	Jhapa	Bhubandag i	1st	3750	100
4th April	Chitwan	Gauriganj	1st	2200	3300
6th April	Nawalparasi	Harkapur		1600	
7th April	Taplejung	Phuling		631	88
8th April	Chandragad hi Bhadrapur	Kumarkhad	2nd & 3rd	69 25	16 6
9th April	Bhadrapur	Kumarkhad	4rth	18	26
18th April	Chitwan		2nd	2200	300
19th April	Kailali	Gadiriya (It is 2nd outbreak)	2nd	400 (700 chick)	
21st April	Chitwan		3rd	56000	
23rdApril	Chitwan	Gondrang Mangalpur	4rth 4rth	26325 3225	32500 0 240
25th April	Rupandehi	Butwal	1st	337	
28th April	Jhapa Bhairawa	Phrithivina gar Bhatpurwa	5th 2nd	200 200	
29th April	Jhapa	Bhadrapur	6th	78	

Table 2: Bird flu outbreaks in the month of May 2013 in Nepal

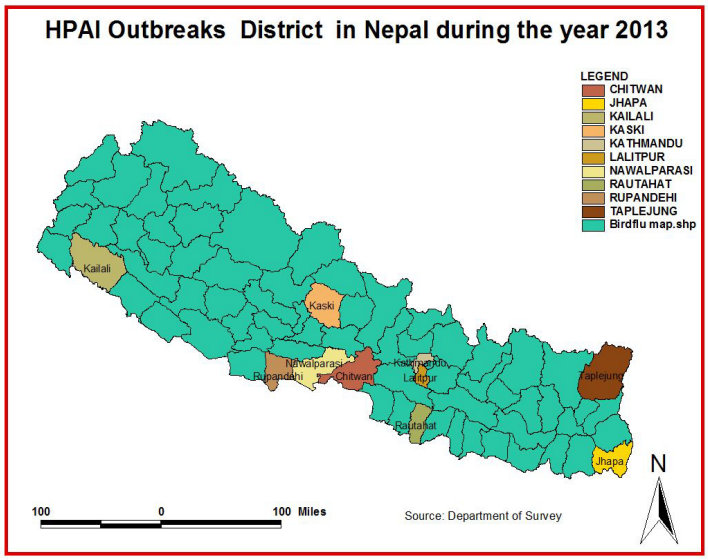
Date of out break	District	VDC	Birds killed
13th May	Rauthat	Chandranigapur, Judibela, Damriya	50 died
14th May	Lalitpur	Manikhel	3500
15th May	Kaski Chitwan	Kalikachowk Mangalpur	555 776
16th May	Kathmandu	Mulpani	1465

This is day to day reporting from different media published daily newspapers in Nepal. This was done by NZFHRC and its survey team.

Outbreak of Bird flu in Nepal during the year 2013

During this year between the 12 February and 30 April, there were 30 outbreak of HPAI (H5N1) which was confirmed laboratory. Of which 13 outbreak in Jhapa, 10 outbreak in Chitwan, 2 outbreak in Lalitpur, 2 outbreak in Rupandehi, 1 in Nawalparasi, 1 in Kailali and 1 in Taplejung districts. Out of total outbreaks cases, 9 (30%) outbreaks were reported in commercial broilers poultry farm, 10 (33.33%) outbreaks were reported in each commercial layers and backyard birds. All the affected birds died in later stages. A total of 43,466 poultry died and the other 67,136 were destroyed in 29 reported outbreaks. One wild crow *(Coryus splendens- Corvidae),* found dead in the premises of custom office at Nepal-India border was also found positive for H5N1 virus. Cleaning and disinfection activities in the infected premises were completed. Intensive surveillance activities are ongoing throughout the country. The HAPI outbreaks districts are shown in map no. 1 (www.oie.int).

A newsletter published by National Zoonoses and Food Hygiene Research Centre (NZFHRC)
Mailing address: G.P.O. Box: 1885, Kathmandu, Nepal. Phone +977-1-4270667, Fax: +977-1-4272694,
Email: ddjoshi.nzfhrc17@gmail.com, ddjoshi@healthnet.org.np, **Website:** www.nzfhrc.org.np



Source: OIE, FAO and EU

NEWS

New Young Researcher career fellow in JE project

Name of young researcher	Research Title	Institute
Ms. Shristi Ghimire	Sero-prevalence of Japanese Encephalitis in Swine and Human of Rupandehi and Kapilvastu districts, Nepal	Himalayan College of Agricultural Sciences and Technology (HICAST), Kalanki, Kathmandu, Affiliated to Purbanchal University (PU)
Mr. Ramesh Kumar Phulara	Sero prevalence of Japanese encephalitis virus (JEV) in pig and human of JE project area of Nepal	Kathmandu College of Science and Technology (KCST), Kalimati
Mr. Bhupendra Khaniya	Sero prevalence of *Echinococcosis/Hydatidosis* in Slaughtering Buffaloes of Kathmandu Valley	Himalayan College of Agricultural Sciences and Technology (HICAST), Kalanki, Kathmandu, Affiliated to PU
Mr. Krishna Chandra Ojha	Seroprevalence of *Toxoplasma gondii* in slaughtered pigs and cats of Kathmandu valley	Himalayan College of Agricultural Sciences and Technology (HICAST), Kalanki, Kathmandu, Affiliated to PU
Mr. Shreeram Poudel	Sero prevalence of Brucellosis in Pigs in Rupandehi District of Nepal	Central Department of Zoology, Tribhuvan University (TU) Kirtipur, Kathmandu, Nepal
Mr. Bibek DC	Sero prevalence of *Taeniasis* in Pigs in Rupandehi and Kapilvastu districts of Nepal	Central Department of Zoology, Tribhuvan University (TU) Kirtipur, Kathmandu, Nepal
Mr. Roshan Sharma	Study of Sero-Prevalence of *Echinococcus Spp* in human of Rupandehi and Kapilvastu districts of Nepal	Kathmandu College of Science and Technology (KCST), Kalimati

Recently composition of One Health Alliance for Nepal (OHAN), according to constitution has been established. The nomination of members of (OHAN) with their respective institute/organization/ ministry/council and university are listed below.

Name and Organizations	Post
Dr. Durga Datt Joshi Kathmandu Metropolitan City Ward no, 13, Kathmandu, Nepal Phone: 9841356729 ddjoshi@healthnet.org.np ddjoshi.nzfhrc17@gmail.com	Chairman
Prof. Dr. I. P. Dhakal Harmi VDC Ward no. 6, Gorkha, Nepal ipdhakal5@gmail.com	Vice Chairman
Dr. N. P. Ghimire Dhikura VDC Ward no. 2 Arghakhanchi, Nepal	Member
Dr. Sanjaya Shrestha Kathmandu, Nepal, Phone: 9851077359 swarun@mos.com.np	Member
Mr. Dibesh Karmacharya Kathmandu Metropolitan City Ward no. 27 Kathmandu, Nepal Phone: 9851110329 dibesh@intrepidmedtech.com	Member
Ms. Minu Sharma, Kathmandu Metropolitan City Ward no, 13, Phone: 9849732242 mamata_sharma0@yahoo.com	Treasure
Ms. Meena Dahal Itahari-4, Sunsari, Nepal, Phone: 9841474756 meena_prasamsha@yahoo.com	Member Secretary

K.D.M.A. Research Award:

Please kindly submit your research work paper on allergy award for the year 2013 for the consideration by the end of September 2013 to KDMART office Chagal, G.P.O. Box 1885, Kathmandu, Nepal, Phone: 4270667, 4274928 and Fax 4272694. This award was established by Dr. D.D. Joshi in 2049 B.S. (1992) on the memory of his wife, the late Mrs. Kaushilya Devi Joshi. The award includes a grant of NCRs. 10,001 with certificate.

From: Zoonoses& Food Hygiene News, NZFHRC
P.O. Box 1885, Chagal, Kathmandu, Nepal.

TO:

Dr/Mr/Ms .....
.....
.....

A newsletter published by National Zoonoses and Food Hygiene Research Centre (NZFHRC)
Mailing address: G.P.O. Box: 1885, Kathmandu, Nepal. Phone +977-1-4270667, Fax: +977-1-4272694,
Email: ddjoshi.nzfhrc17@gmail.com, ddjoshi@healthnet.org.np, **Website:** www.nzfhrc.org.np