

## **Public Health Implication of Man and Livestock Cohabitation: *Cordylobia* Infestation in SW Nigeria: A Case Study**

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**Abstract:** Infection by *Cordylobia anthropophaga* was observed in an 8-year old boy in a family of six living in a farm house located on a plot of land, 50×40 m in the South West of Nigeria. The farm has a 500 caged layer-unit, 6 goats and 3-sow units both on semi-intensive system and three watch dogs. This infestation (*Cordylobia*) was also observed to be very massive on two of their dogs and on the perineum of a pregnant sow from where the larva borrowed through the vaginal wall and reaching the uterus, causing straining and prolapse. An inspection round the farm premises revealed improper disposal of the domestic and livestock manure which attract intensive fly breeding. This observation stresses the importance of farm hygiene, good management and thoughtful planning that would enable correct location of a farm house within the farm premise for effective control of zoonoses.

**Key words:** Zoonoses, public health, man, livestock, cohabitation

### **INTRODUCTION**

Man has many purposes for keeping livestock which play enormous roles in his life. Such animals are kept for food, pleasure, security, entertainment for adjunct psychotherapy and economic reasons. Over the years, dogs have been associated with man either as pets, shepherd dogs, watch dogs, or even as leads for the disabled especially the blinds. Dogs are particularly cherished as watch animals in low density, government reservation areas because they easily alert the household members of the arrival of visitors (wanted or hoodlums). From the afore-mentioned utility, man needs to cohabit with animals under conditions which may include vocational animal production, day and night services where watchmen need these animals to complement their efficiency. Hunters use dogs for tracing the game which has been shot but makes effort to escape far away from the shooting site<sup>[1]</sup>.

Major among the hazards of man-animal interaction is the communicable diseases which are very common experiences worldwide<sup>[1,2]</sup>. Brucellosis is contacted through tissues, blood, urine, vaginal discharges or aborted fetuses from infected animal<sup>[3,4]</sup>. Wool sorter diseases (malignant pustules) shared between the sheep and their wool shearers, toxoplasmosis causing undue fatigue and muscle pains in consumers of raw or undercooked infected cows usually by ingestion of

unpasteurised milk or dairy products or by air borne spread to farmers and animal handlers. Salmonellosis can be contacted through the ingestion of egg-products or cracked eggs and poultry meat especially broiler chickens and turkeys. Flies constitute nuisance in and around livestock farm and industries especially during the wet season when they multiply at a fast rate. The flies cause annoyance making animals listless, disturb their feeding and some of them (*Musca domestica*) transmit diseases by washing the pathogens carried on their bodies into water; some flies such as *Stomoxys calcitrans* feed on these animals by biting and sucking them thus serving as mechanical vectors of diseases such as anthrax and equine infectious anaemia<sup>[5]</sup>.

Myiasis is a disease caused by fly larva in man and animal. Such flies include *Cordylobia anthropophaga*, *Auchueromia luteola* (floor maggot) and *Dermatobia homonis*. They adapt to a parasitic life of breeding only in wounds and sores on their hosts. They live on cattle, pigs, fowls, dogs and man. The flies lay eggs in the predilection sites on these host animals or occasionally around the vulva when there is a bloody discharge. The maggots hatch out and penetrate the tissues which may then become liquefied and in this way extend the lesion.

Adult *Cordylobia anthropophaga* is a stout fly about 1 cm long, light brown or dull yellow in colour with greyish patches on the thorax and dark grey areas on the posterior part of the abdomen. They lay up to 500 eggs at

Plate 1: A local dog heavily infested with larvae of *Cordylobia arthropophaga*. Arrows indicate points of the *Cordylobia* larvae on the dog

Plate 2: Prolapsed uterus (white arrow); *Cordylobia* larvae were extracted from the burrow indicated by the black arrow

a time around where animals lie; hatch within 4 days into larvae which attach to the host penetrating the skin and produce painful swelling like boil with a centre or a crater-like opening through which the larva breathes<sup>[6]</sup>. This study reports the case of tumbu fly cross infestation of a livestock farming family members, their dogs and pigs thus highlighting the risk involved in rearing animals in homes and or keeping them on range among the rural and urban populations. Consequently, it is to include and enforce an adequate manure-waste-disposal system in the architectural design of human house or farm buildings as necessary preventive measure against parasitic zoonotic diseases.

**History:** Two out of the three dogs owned by affected livestock farmer were presented for examination following his observation of unusual reaction such as scratching, body and ear shaking, hiding in burrows, tunnels and under packed vehicles all followed by inactivity, dullness, dosing, restlessness and at times stampeding but full appetite.

On Examination, several swellings of different sizes were found all over the body except the head (Plate 1) and faces which were covered with wounds created by aggressive self-scratching. Digital pressure on each of the softer swellings expressed straw-coloured fluid (serum) at first; followed by life or dead larvae of various sizes ranging from 0.6-1.5 cm long, white when alive and dark grey when dead.

In the pig unit, one of the three sows was also observed to be affected. According to the farmer's reports, the pig had been straining for a few days and the uterus was prolapsed (Plate 2); it had a burrow (opening) around the perineum through which four larvae were expressed out with some serous fluid.

Plate 3: Back view of the boy infested with *Cordylobia* larva. Arrow indicates a transparent subcutaneous swelling on the lower trunk

The farmer who had earlier been faced with similar condition on his eight year old boy (Plate 3) on whom two of the same type of larvae (Plate 4) were earlier extracted (from the axilla and around the rib) was greatly worried because some of his goats have also been infested the same way. Further investigation through the farm and its environ inspection as well as oral interview revealed improperly disposed manure (livestock and human) and

Plate 4: Two of the *Cordylobia* larvae (arrowed) extracted from the swellings/burrows of the affected patients

spread of clothing around places where manure was heaped. The distance between the caged layers units and the main living house was observed to be too close. The fly population in the environment was remarkably too high.

### DISCUSSION

Naturally, it is a common practice of the livestock farmer with his family to live nearest his animals as observed in this study; especially so in the present economic recession when most employees want to supplement their earnings<sup>[7]</sup>. The essence of public health education is to generate necessary information for the management of patients and the environment towards the control of communicable diseases<sup>[8]</sup>. More than 90% of farming environment in Nigeria do not maintain proper farm hygiene. An immediate example is the intensive livestock particularly poultry farms which accumulate manure on and around the farm for long period because they are faced with the problem of disposal. Such heaps of manure generate objectionable odours that offend the neighbours. When wet, the manure becomes a medium for breeding flies of various types which according to Huttly<sup>[9]</sup> and Matanmi<sup>[10]</sup> also serves to disseminate disease-causing organisms apart from being a nuisance to both animals and humans. Hall<sup>[5]</sup> stated that in an unsanitary environment, a single *Musca domestica* fly can carry hundreds of millions of bacteria on its body and even greater numbers in its intestines. Some species of flies have been known to transmit diseases such as anthrax, mastitis, typhoid and paratyphoid fevers, cholera, numerous viral, protozoal as well as eggs of many tapeworms and roundworms that eventually lead to parasitic diseases<sup>[8,11,12]</sup>. Strainton<sup>[13]</sup> mentioned the

activities of the flies in laying eggs in sleeping places of man and various animals, on the ground or in the straw, sometimes apparently on clothing that smells of perspiration. Their larvae hatch after 2-4 days and penetrate the host skin where they mature in 8-15 days. Usually the larva is situated in a swelling which is not very large but rather painful and has a small central opening like a boil. Of the domestic animals, dogs and rabbits are preferred hosts<sup>[1]</sup>. According to Hall<sup>[5]</sup>, humans frequently become infested from clothings which have been laid on bushes or on the ground to dry after washing; the larvae becoming so attached to the edges of the garments and when it is again worn, the larvae penetrate the skin next to the edge of the garment, such as the arm or leg where sleeves or trousers end. But fly strike and tumbu fly infestations are serious problems and may cause serious damage or mortality if not treated early. Dress washing, environmental care as well as other coordinated preventive and curative measures are recommended<sup>[14]</sup>; these include the WHO/FAO<sup>[15]</sup> recommended actions which stressed the roles of veterinarians, animal health technologists and the primary health care workers in disease prevention and control in community health.

### CONCLUSION

Problems of zoonoses, food hygiene and waste disposal should be taken very seriously by the individuals and all tiers of governments. Current environmental health management programmes should be evaluated and regularly re-evaluated as to make them cost-effective and more efficient to attain sustainable healthy environment for both men and the animals. Every person should note that evaluation is a useful tool and it gives us an opportunity (humans) to manage our environment better. Cutting and Elliott,<sup>[16]</sup> and UNDP,<sup>[7]</sup> concluded that evaluation should be a partnership in which health workers and communities work together for improved health care. The authors of this study concur with such ideal.

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