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Original Article

Parasitic Infections of Free –Range Chickens from Golestan Province, Iran

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Abstract

Background: The aim of this study was to determine the prevalence, intensity, and species of internal and external parasites of native fowls from Golestan Province, north of Iran.

Methods: During 2007, different organs of 26 and 24 adult female native fowls collected from humid parts (Gorgan, Kord Kooy, Ramian and Bandar Gaz) and dry regions (Gonbad Kavoods, and Bandar Torkaman) of Golestan Province, respectively were searched for parasite. Two blood smears taken from each bird were stained with Geimsa. External parasites and nematodes were preserved in 70 % alcohol containing 5% glycerin. Cestodes were fixed in 10% formalin and stained with carmine acid for further studies.

Results: Fifteen species of parasites were collected from alimentary canals, lungs, feathers and subcutaneous nodules as follows: Alimentary canal: *Ascaridia galli* (56%), *Heterakis gallinarum* (24%), *Capillaria anatis* (4%), *Cheilospirura hamulosa* (4%), *Raillietina tetragona* (58%), *R. echinobothrida* (6%), and *Choanotaenia infundibulum* (8%); Lungs: *Syngamus trachea* (16%); Feathers: *Monopon gallinae* (40%), *Menacanthus stramineus* (40%), *Liperus caponis* (32%), *Goniodes dissimilis* (38%), *Cuclogaster heterographus* (8%), *Dermanissus gallinae* (20%) and subcutaneous nodules: *Laminosioptes cysticola* (6%).

Conclusion: The frequency distribution of most species was low. *L. cysticola* is the first host and distribution record for Iran

Keywords: Parasitism, Native fowls, Helminths, Iran

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Introduction

The prevalence of most parasitic diseases in poultry seems to have been reduced significantly in commercial poultry production, due to improvement in management (1), although in rural scavenging poultry in the world a number of parasites are widely distributed (1, 2). Few reports exist also on the internal and external parasites of native fowl from different parts of Iran (3-8). Native fowls parasitic infections constitute a health and economic problem as well as a source of infection for industrial poultry, wild birds and man (9-12).

The aim of this study was to determine the prevalence, intensity, and species of internal and external parasites of native fowls from Golestan Province, north of Iran.

Materials and Methods

During 2007, different organs of 26 and 24 adult female native fowls, collected from different villages of humid parts (Gorgan, Kord Kooy, Ramian and Bandar Gaz) and dry regions (Gonbad Kavoods, and Bandar Torkaman) of Golestan Province were searched for parasite. Two blood smears taken from wing vein were stained with Geimsa. At necropsy, the feathers of each bird were kept in plastic bag containing 10% formaldehyde for 24 hours and then were washed with detergent in a 100-mesh sieve. External parasites were collected from

plastic bags, washed materials, and preserved in 70% alcohol containing 5% glycerin. Subcutaneous nodules of each bird were fixed in 10% potassium, heated for 20 minutes in a jar containing water and their sediments were searched for parasite.

Results

Totally, 96% of the fowl harbored at least one species of parasite. Out of 15 species found, 6 and 1 species of helminths were collected from alimentary canals, and lungs respectively. Feathers and subcutaneous tissues harbored also 6 and 1 species of external parasites respectively. The prevalence and frequency distribution of parasitism in two different climatic conditions followed more or less similar pattern. The results are summarized in Table 1 and 2. The prevalence of most external parasites except that of *C. heterographus* and *L. cysticola*, was high, but their intensities, similar to that of helminth infections, was low.

Our finding showed that *R. tetragona* (58%) *A. galli*, (56%), *H. gallinarum* (24%) and *S. trachea* (16%) were among the most prevalent species, whereas low frequency distribution (from 1 to 10) was recorded for most helminths except that of *H. gallinarum* (78.66).

Table 1: Prevalence and intensity of helminth infections in 50 native fowls from Golestsn Province, northern Iran

Parasite	No. of infected birds	Infection (%)	Mean	Range
<i>Ascaridia galli</i>	28	56	10	1-25
<i>Heterakis gallinarum</i>	12	24	78.66	6-215
<i>Capillaria anatis</i>	2	4	5.33	3-8
<i>Cheilospirura hamulosa</i>	2	4	1	1
<i>Syngamus trachea</i>	8	16	3.75	1-10
<i>Raillietina tetragona</i>	29	58	2.96	1 -9
<i>Raillietina echinobothrida</i>	3	6	2	1 - 2
<i>Choanotaenia infundibulum</i>	4	8	1.5	1-2

Table 2: Prevalence and intensity of external parasites collected from 50 native fowls from Golestan province

Parasite	No. of infected birds	Infection (%)	Mean	Range
<i>Liperus caponis</i>	16	32	27	1 - 137
<i>Monopon gallinae</i>	20	40	9.5	2 - 30
<i>Menacanthus stramineus</i>	20	40	56.4	4 - 120
<i>Goniodes ocilis</i>	19	38	2.37	1 - 5
<i>Cuclogaster heterographus</i>	4	8	2.5	1 - 4
<i>Dermanissus gallinae</i>	10	20	4	1 - 7
<i>Laminosioptescysticola</i>	3	6	not counted	not counted

Discussion

Traditional poultry production is often described as a low input/low output system and small flocks are left scavenging around to obtain their food. Low productivity is mainly caused by diseases including parasitic diseases, suboptimal management, and lack of supplement feed (1). The parasites recorded in this survey, although are new local host and distribution record for Golestan Province, but all, except that of *L. cysticola* were previously reported from native chickens of Iran (3, 7, 8), Urmia (4), Shahreh-kord (5) and Khuzestan (6). Similar to our results *A. galli*, *H. gallinarum* and *R. echinobothrida* were the most prevalent helminth species in the latter studies. Our findings are also in line with scavenging poultry of Ethiopia (12) and India (13), where harbored 6 species of nematodes and 6 species of cestodes and *A. galli* (55 %) and *Raillietina* sp. (60 %) were the most prevalent species respectively. The majority of parasites reported herein could be potentially pathogenic for poultry by inducing enteritis, ulceration or granuloma followed by anorexia, depression, emaciation and death (14). Pathological changes in native fowls induced by *C. hamulosa* have been shown in Iran (15). Treatment of native fowls infected with *A. galli* produces significant increase in weight gain ($P < 0.01$) (9, 16, 17). Whereas infection with *A. galli*, *Capillaria* spp. and *R. echinobothrida* has been reported to cause, sever pathological lesions and death (14).

Among 27 species of mallophaga reported from birds in Iran (7), 16 are common with native fowl (8) of which five were reported in this survey. Birds' lice usually infect egg layer pullets (8). Because they pass their entire life on host and ordinarily eat feathers products, had no significant effects on production of egg but sometimes may consume blood (18).

Dermanyssus gallinae is a common mite of poultry houses and the most important haematophagous ectoparasite of birds (10). Chicken

mites may cause sever problems for producers, through potential direct effects on weight gain, egg production and sperm production in rooster and importance nuisance pest for human beings including poultry workers and particularly whom handle hens and eggs (11). *Laminosioptes cysticola* a subcutaneous mite, is reported from Europe and United States, and calcify nodules cause downgrading of the carcass (19). Consequently, it is important to note that despite of low intensity recorded for each parasite, multiple infections was the rule in examined chickens and 96% of them harbored more than one species of parasite. Therefore, further studies are needed to elucidate the economic and hygiene impacts of multiple parasitic infections on poultry reared in backyard system.

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References

1. Pandey VS, Demey F, Verhulst A. Parasitic Diseases: A neglected problem in village poultry in Sub-Saharan Africa. In: Pandey VS, Demy F, editors. Village Poultry Production in Africa. Rabat: Morocco. 1992. p.136 – 141.
2. Bagust TJ. Improvement health for poultry production in Asia, a development of perspective. *Avi Pathol.* 1994; 23:395 – 404.
3. Eslami A, Anwar M. Frequence des helminthes chez les volailles en Iran . *Rev Elev Med Vet pays Trop.* 1973; 29:309 -311.
4. Naem S, Eskandari S. Prevalence of intestinal helminths of native chickens

- in Urmia, Iran. Iranian J Vet Res Univ Shiraz. 2005; 3 (2): 200 – 203.
5. Nabavi R, Manouchehreh-Naiini K, Yavari M, Zebardast M. Study on the gastrointestinal helminthes of native fowls of Shahreh- Kord. Iranian J Vet Sci. 2005; 2 (4): 311- 316.
 6. Nabavi R, Abdollah-Poor M, Abdi Zadeh R. Study on the gastrointestinal helminthes of native fowls of Gativan, Khuzestan, Iran. 6th Congress of Parasitology. 2007; 97.
 7. Ardalan A. Maloghaga of Iran. Bull Soc Path Exot. 1972; 65: 235-39.
 8. Rafyi A, Alavi A, Rak H. Bird lice in Iran . J Vet Fac Univ Tehran. 1969; 25:107-123.
 9. Reid WM, Carmon JL. Effect of numbers of *Ascaridia galli* in depressing weight gains in chicks. J Parasitol. 1958; 44: 183 – 186.
 10. Kilpinen O, Roepstorff A, Permin A, Nørgaard-Nielsen G, Lawson LG, Simonsen HB. Influence of *Dermanyssus gallinae* and *Ascaridia galli* infections on behavior and health of laying hens (*Gallus gallus domesticus*). Br Poult Sci. 2005; 46 (1): 26 – 34.
 11. Bellanger AP, Bories C, Foulet F, Bretagne S, Botterel F. Nosocomial dermatitis caused by *Dermanyssus gallinae*. Infect Cont Hosp Epidemiol. 2008; 29 (3): 282-3.
 12. Anshnafi HE, Shetu Y. Study on gastrointestinal helminthes of local chicken in central Ethiopia. Med Vet. 2004; 155(10): 504 -507.
 13. Yadav AK, Tandon V. Helminth parasitism of domestic fowl (*Gallus domesticus*) in a subtropical high rainfall area of India. Beitr trop Landwirtsch Vet Med. 1991; 9: 97- 104.
 14. Permin A, Bisgaard M, Frandsen F, Peartman M, Kold J, Nansen P. The prevalence of gastrointestinal helminths in different poultry production systems. Br Poult Sci. 1999; 40 (4): 439 – 443.
 15. Talebi A, Farshid A, Tavassoli M. *Cheilospirura hamulosa* and its pathological examination in indigenous birds. J Vet Fac Univ Tehran. 2003; 58(4): 375 – 376.
 16. Phiri IK, Phiri A M, Ziela Z, Chota A, Masku M, Monrad J. Prevalence and distribution of gastrointestinal helminthes and their effect on the weight of free-ranged chicken in central Zambia. Trop Anim Hlth Prod. 2007; 39 (4): 309.
 17. Permin A. Helminth and helminthosis in poultry with special emphasis on *Ascaridia galli* [PhD dissertation]. Royal Veterinary and Agriculture University; Copenhagen, Denmark. 1977.
 18. Stockdale H, Ruan ES. Economic importance of the chicken body louse. J Econ Entomol. 1960; 53: 421-23.
 19. Amure J, Stuart JC. A case of *Laminosioptes cysticola* infection. Vet Rec. 1977; 101: 387.