Prevalence rate of *Raillietina cesticillus* in domestic chickens of District Mardan, KPK, Pakistan

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**ABSTRACT**

**Background:** This survey was conducted with the basic aim to find out the prevalence of *Raillietina cesticillus* in domestic chicken of district Mardan from August to March (2014-2015).

**Methods:** The gastrointestinal tracts were removed from the slaughtered chickens. Then cut longitudinally with the help of a scissor and its contents were washed and the presence of the adult parasite were observed.

**Results:** The total 689 samples of slaughtered chickens were collected, in which 125 were infected with the prevalence rate of 18.14%, likewise, the prevalence rate was recorded under different parameters in consideration of month, season, gender and area.

**Conclusion:** It was concluded that high rate of infestation with *Raillietina cesticillus* was found in district Mardan. Thus, it can be controlled and minimized by proper management and regular use of anti-helmintic medicines.

**Keywords:** slaughtered chickens, parasitic infection, season, poultry

**BACKGROUND**

Nowadays, poultry industry emerges as a new source of income in Pakistan, which not only gave Rs.564 billion but also contributed in eradication of unemployment of about 15 million people and is directly or indirectly benefited from this sector. It also helps in improvement of livestock (11.5%) as well as agriculture (6.4%) [1]. The increasing population worldwide increases demand for mutton and beef, which can only be compensated and fulfilled by poultry industry [2].

Eggs and meats are the two main products of poultry sector and serve as the most essential source of food, which provides about 30% of the whole protein throughout the world [3]. Most of the chickens in rural area of Pakistan are related to free range scavenging system, which is mostly susceptible to parasitic infection because they feed on house hold waste, insect larvae and seeds [4]. Due to various infestation caused by viruses, bacteria and other parasites, more than 750 million chicken, Guinea fowls and duckling in Africa die each year [5]. These parasites indirectly infest the domestic chicken through contaminated food substances, such as grains, fruits, insect etc. [6-7] The intestinal tract of chickens is inhabited by some species of cestode parasites. So, it has been estimated that more than 1,400 species of tapeworms.
infest the intestinal tract of domesticated chicken and wild birds due to its free ranging mode of life [8]. The life cycle of tapeworm is indirect and therefore require secondary host to complete its life cycle. Intermediate host of tapeworm are beetle, flies, ants, slugs and crustacean [9]. Disease caused by helminthic (tapeworm) parasite leading to reduction in growth, weight, egg production and significant hemoglobin, eventually results in mortality of the host [10-11]. Infested chicken are marked with the symptoms like vacuolation of epithelial cells, villous atrophy, desquamation of epithelium of villi and submucosal glands congestion, catarrhal enteritis, formation of granuloma in duodenum and inflammatory reactions [12]. This research was carried out to find the prevalence rate of Raillietina cesticillus in District Mardan. The domestic chickens are more commonly infested from this parasite in Mardan.

METHODOLOGY

Study area

The present survey was conducted in District Mardan to find out the prevalence rate of Raillietina cesticillus in domestic chickens.

Observation period

The survey was started from August 2014 to March 2015, in which total of 689 domestic chickens of different sex, area and season were observed for the presence or absence of adult helminth parasites specially Raillietina cesticillus. The gender of chickens was identified by Jett method [13].

Samples collection and procedure of examination

The chickens were slaughtered and the entire gastrointestinal tract was removed. The gastrointestinal tract was opened with the help of scissor along its length; the contents were carefully washed and examined [14].

Parasite identification and Preservation

All the adult worms (Raillietina cesticillus) were identified directly under the stereo-microscope using the characteristics described [15-16]. First of all, the helminth parasites were separated, then collected with forceps and finally, preserved in 10% formalin.

RESULTS

The major purpose of this research work was to find and record the prevalence of Raillietina cesticillus in domestic chicken in District Mardan. The results obtained so far are given below.

Over all prevalence

125 chickens out of 689 were found to be infested with Raillietina cesticillus. So, the overall prevalence rate was 18.14%. (Figure 1)

![Figure 1 Prevalence of Raillietina cesticillus](image-url)
Month wise prevalence
From August up to March (2014-2015), the prevalence rate was (20.43, 25, 25.78, 35, 23.36, 21.6, 12.08, 6.67) % respectively (Figure 2).

Gender wise prevalence
The prevalence rate in female was found to be 21.2% while 14.33% was recorded in male. (Figure 3)

Season wise prevalence
With respect to seasons, the prevalence rate in winter was 46.97%, in spring it was about 6.7%, in summer 21.1% while in fall it was 30.37% (Figure 4).

Area wise prevalence
Data was collected from Mardan city and Mardan rural areas, having prevalence rate 16.69% and 22.04% respectively (Figure 5).

DISCUSSION
The present survey demonstrated the prevalence of *Raillietina cesticillus* in domestic chicken in District Mardan, with the duration of 8 months. Total 689 samples were observed for the prevalence of *Raillietina cesticillus*. The overall prevalence noted in this research survey is 18.14%, which is nearly equivalent to 19% [17], less than 22.5% [18], 29.1% [19] and greater than 5.82% [20],12.8% reported from Faisalabad, Pakistan [21]. The difference in prevalence rate is due to the poor
management of poultry system, their scavenging mode of life as well as climatic condition.

The month-wise prevalence, reported in this study, show variation ranging from 6.67 to 35%, lowest prevalence in March while high prevalence in November, due to different climatic conditions. While the gender wise prevalence rate is 14.33% in male and 21.2% in female which is against the prevalence recorded [19] which is 32% male and 25% female. This variation is caused by the free ranging scavenging habit as well as voracious mode of eating of female and selective mode of feeding by the male. Season-wise prevalence revealed the highest prevalence in winter 46.97% followed by fall 30.37%, summer 21.1% and the lowest prevalence rate noted in spring 6.7%. The difference recorded is mainly due to variation in temperature, humidity and other physical factors.

**CONCLUSION**

To control the infestation of domestic chicken by *Raillietina cesticillus* is only possible if definitive host (chicken) is not allowed eating intermediate host (arthropods), while second way is the proper and regular use of anti-helminthic drugs for the treatment of domestic chicken.

**COMPETING INTERESTS**

We declare that we don’t have competing interest.

**CONTRIBUTIONS**

All authors performed the sample, data collection and laboratory experiments, statistical analysis, conceived part of this study and revised the manuscript. All authors read and approved the final manuscript.

**ETHICAL CONSIDERATION**

This study was approved by Institutional Review Committee of Department of Zoology, Abdul Wali Khan University Mardan, KPK, Pakistan.

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