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To cite this article: Daniela Piergili Fioretti, Fabrizia Veronesi, Manuela Diaferia, Maria Pia Franciosini & Patrizia Casagrande Proietti (2005) *Ascaridia galli*: a report of erratic migration, Italian Journal of Animal Science, 4:3, 310-312, DOI: [10.4081/ijas.2005.310](https://doi.org/10.4081/ijas.2005.310)

To link to this article: <https://doi.org/10.4081/ijas.2005.310>



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Published online: 01 Mar 2016.



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CASE REPORT

Ascaridia galli: a report of erratic migration

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ABSTRACT

This paper describes a case of an unusual recovery of adult *Ascaridia galli* in hen's egg. Several data are available on this occurrence but it appears to be the first case described in Italy. The worm was identified as an adult female, 6.8 cm in length, with three trilobed lips, cervical narrow alae, oesophagus club-shaped without posterior bulb, vulva near the middle of body, with gravid uteri containing a large number of eggs. The presence of *Ascaridia galli* in hen's eggs cannot be considered as hazard for public health but may be cause of a potential consumer complaint. Moreover it is a sign of presence of ascariidiosis, parasitosis that still produces economic losses in modern poultry production system.

Key Words: Hen, *Ascaridia galli*, Erratic migration, Egg.

RIASSUNTO

ASCARIDIA GALLI: UN CASO DI MIGRAZIONE ERRATICA

Nel seguente lavoro viene descritto l'inconsueto ritrovamento nell'albume di un uovo commerciale di gallina di un esemplare adulto di Ascaridia galli. Dalla bibliografia a nostra disposizione, relativa all'argomento, questa risulta essere la prima segnalazione effettuata nel nostro Paese.

Il nematode isolato è stato identificato come femmina adulta di Ascaridia galli, di 6,8 cm di lunghezza, morfologicamente caratterizzato da bocca trilabiata, esofago claviforme con assenza di bulbo posteriore, strette ali cefaliche, vulva situata nella parte mediana del corpo. L'esemplare inoltre era gravido con un utero contenente numerose e caratteristiche uova. Il riscontro di Ascaridia galli nelle uova di gallina, pur non rappresentando un rischio per la salute pubblica, è tuttavia fonte di estremo disagio per i consumatori. Recentemente l'affermarsi di sistemi di allevamento alternativi ha di nuovo reso attuale la presenza di questa parassitosi nel settore avicolo.

Parole chiave: Gallina ovaioia, *Ascaridia galli*, Migrazione erratica, Uovo.

Introduction

Ascaridia galli, the largest and the most common helminth of the small intestine of chickens, is a parasite with a direct life cycle and poultry is infected by ingestion of embryonated eggs containing the second larval stage (L2). The infection is a direct consequence of faecal contamination of environment. The parasite completes its life cycle

exclusively in the intestinal tract with a larval migratory phase into the enteric wall.

One of the most striking effects of infection is the occasional finding of this parasite in the hen's egg. Although several observations of this phenomenon have been made in literature (Akinyemi *et al.*, 1980; Omran, 1982; Manna, 1992), as far as we know, it is the first case reported in Italy.

Material and methods

In this study a fresh chicken egg, with a white filiform structure referable to a round worm in the albumen (Figure 1), bought by a private consumer and coming from an Umbrian commercial farming, was submitted to our attention.

The worm isolated, washed in distilled water, kept in physiological solution for 2 hours at 40°C to help the extension, fixed in 70% alcohol for 24 hours, clarified in lactophenol of Amman for 10 hours, mounted on a microscope slide, was observed by light microscopy at 10x- 40x.

On the basis of morphometric characteristics (6,8 cm in length, three trilobed lips, cervical narrow alae, oesophagus club-shaped without posterior bulb (Figure 2), vulva near the middle of body, gravid uteri containing a large number of eggs, the worm was identified as an adult female of *Ascaridia galli* (Yamaguti, 1961).

Figure 1. An adult of *Ascaridia galli* in albumen of hen's egg.



Figure 2. Oesophagus club-shaped without posterior bulb.



Results and discussion

The floatation method with a sugar NaNO_3 solution allowed to evidence the presence in the albumen of typical *Ascaridia galli* eggs, oval in shape, with smooth shell and size of 75 x 30 μm .

It is possible that this occurrence is quite frequent but the common use of hard-boiled eggs could make unnoticeable the presence of these worms in the boiled egg albumen.

A primary localization in the genital apparatus of *Ascaridia galli* larva L_2 with subsequent maturation to adult worm has to be excluded because the egg production is more quick than the time required for maturity of larva. In addition the adult worm in egg was gravid and *Ascaridia galli* is not an hermaphrodite nematode. Presumably the worms migrate up the oviduct via the intestinal wall and peritoneal cavity or via the cloaca with subsequent inclusion in the egg.

Although the presence of *Ascaridia galli* in hen's eggs cannot be considered as hazard for public health, it may be cause of potential consumers complaint.

This finding is noteworthy since it indirectly points out the problems related to ascariidiosis, that at present is playing an important role in the alternative rearing systems, such as the organic farming.

It is known that the most of the conventional farming could be shortly converted on the floor system on the basis of 74/99 CEE regulation.

Conclusions

Recent epidemiological studies carried out on different poultry breeding systems showed a *Ascaridia galli* prevalence of 63.9% in organic chickens and a prevalence of 41.9% in chickens reared in covered strawyard. The prevalence reported in breeders and in caged hens was respectively 37.5% and 5% (Permin *et al.*, 1999).

On the basis of these epidemiological data and of our report further investigations are suggested to obtain more information on the occurrence of Ascariidiosis in Umbria (Central Italy) in relation to diffusion of alternative housing systems in hens.

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The Editor-in-Chief and the Guest Editors are indebted with the following reviewers for their assistance in refereeing papers and case reports submitted to the Scientific Committee of the Congress.

Camarda, A.; Catelli, E.; Fioretti, A.; Gallazzi, D.; Gavazzi, L.; Grilli, G.; Lavazza, A.; Moreno Martin, A.; Ortali, G.; Pascucci, S.; Piccirillo, A.; Stonfer, M.; Terregino, C.; Tosi, G.