Case Report

Chrysomya bezziana as a Causative Agent of Human Myiasis in Fars Province, Southern Iran

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Abstract

Myiasis is the invasion of body tissues of humans or animals by the larvae of the Diptera or two-winged flies. The various forms of myiasis may be classified from clinical or entomological point. This study describes the existence of *Chrysomya bezziana* (Diptera: Calliphoridae) cases as a causative agent of myiasis in 18 and 87 year-old men in two different regions in Fars Province. To our knowledge, this is the first observation of mentioned species in this province.

Keywords: *Chrysomya bezziana*, Myiasis, Iran

Introduction

Myiasis can be defined as invasion of the organs and tissues of human or vertebrate animals with dipterous larvae (Rohela et al. 2006). Dipterous larvae belonging to the family Calliphoridae are able to invade to humans' tissues or cavities (Granz et al. 1975). They are usually saprophagous, feeding on carcasses, but the eggs can also be laid upon livestock and humans, or either on wounds, sores or areas contaminated with faeces or urine, where the feeding of larvae causes debilitating myiases (Green et al. 2004). They have been reported as a secondary myiasis producer in livestock operations (Byrd and Allen 2001). Myiasis appears to be fairly common but underestimated in many rural areas. In some areas of Fars Province in the south of Iran and, the cases of myiasis caused by this family specially belonging to *Chrysomya bezziana* have been increased (Navidpour et al. 1996; Radmanesh et al. 2000, Masoodi et al. 2004). This study presents two patient cases of myiasis infected by *C. bezziana*. The importance of this study was to report the new species of myiasis in Fars Province in the south of Iran.

Case report

Two cases with the following characteristics were investigated in this study.

An 18 yr old boy from Lamerd County was one of the victims of variable myiasis cases causes in Fars Province. He was referred to Khalili Hospital (affiliated to Shiraz University of Medical Sciences) by his mother. He was a known case of congenital cerebral palsy with quadriplegia and mental retardation associated with severe failure to thrive. He was referred due to an oral lesion and poor feeding because of his inability to feed orally. His family was in low economic status with poor hygiene. In physical examination, he looked like a 5 yr old boy due to severe failure to thrive. He had diffused erythematous, a tender hard palate and a superficial ulcerative mucosal lesion between the peripheral aspect of the palate and the upper gum, associated with odynophagia, lethargy and dehydration. A Total of 33 worm-like organisms were detected in the peripheral part of his palate (Fig. 1a). During the hospital course, after local and supportive therapy condition of the patient, he improved and was discharged from hospital.

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Another case was an 87 yr old addict man with cardiovascular as well as peripheral vascular disease based on the longstanding diabetes mellitus from Shiraz, southern Iran. He also referred to hospital with chief complaint of severe itching of both lower extremities. The patient had history of both feet vascular ulcers for which receiving pentoxiphiline at a dose of 1000 mg/day and also antianginal drugs.

In both cases, the different stages of isolated larvae were cultured in Blood Agar (BA) medium. The growth rates of them were followed up at 37 ^{o}C incubator, and the metamorphosis of the pupa to the adult stage were followed in glass flasks containing BA medium (Kalantari et al. 2006).

Diagnosis of myiasis causing larvae is based on the form of spiracles, cephalopharyngeal skeleton, shape and size of developed larvae: the posterior spiracles (Fig. 1c), do not have a distinct button and the numbers of lobes on the anterior spiracles are six, which would give a definitive identification of *C. bezziana*. Finally, the robust spine bands (Fig. 1b), are other indicative criteria of *C. bezziana* (Belding 196), as well as characteristics of reared adults. In the subfamily Chrysomyinae, body-length varies between 8 and 12 mm, abdomen and thorax is shining metallic, dorsum of the first and the second abdominal tergites are black. Body is metallic green or blue and abdominal tergites include narrow dark bands along posterior margins. Legs are black or partly dark-brown; wings are hyaline with the infuscated base (Fig. 2) (Whitworth 2006).

Based on the mentioned diagnostic keys and comparing the whole shape of the larvae (Fig. 1b), posterior spiracles (Fig. 1c), cephalopharyngeal skeleton (Fig. 1d), and also adult characteristics, they were diagnosed as *Chrysomya bezziana* (Diptera: Calliphoridae).

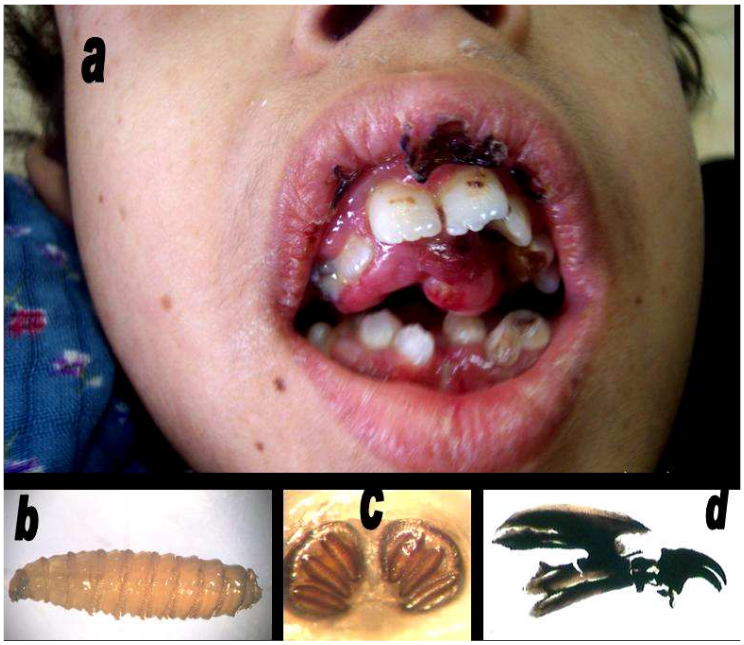

Fig.1. (a): The patient's mouth part infested by *Chrysomya bezziana* larva, (b): *C. bezziana* in the third stage of larvae (125×), (c): Posterior spiracle of *C. bezziana* in the third stage of larvae (125×), (d): Cephalopharyngeal skeleton of *C. bezziana* in the third larval stage (125×) (Original photos)

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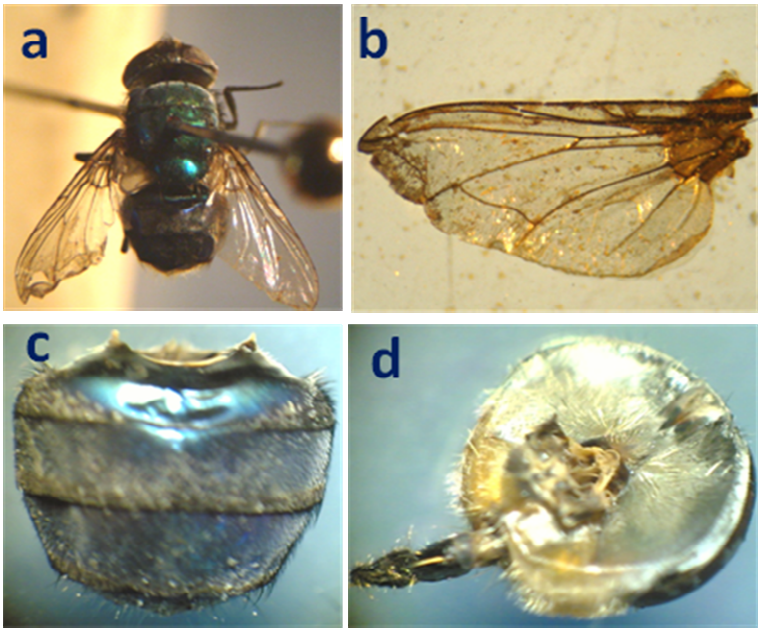

Fig. 2. Details of the adult of *Chrysomya bezziana* found in this study: (a): whole body (40×), (b): wing (100×), thorax (125×), (d): head (125×) (Original photos).

Discussion

A number of species in Calliphoridae family are responsible for causing myiasis in human and animals (Zumpt 1965, Granz et al. 1975). Human myiasis due to this family have been reported from the United States of America (Hall et al. 1986; Alexis and Mittleman 1988; Miller et al. 1990) and Canada (Ali-khan and Ali-khan 1975). They have also been reported as the agents of urogenital myiasis in Pakistan (Jabbar-khan and Jabbar-khan 1985).

Lucilia sericata (Diptera: Calliphoridae) has caused wound (Talari et al. 2004) and auricular myiasis (Yaghoobi et al. 2005) in the central parts of Iran. A rare case of internal myiasis caused by *Cynomyopsis cadaverina* has been reported from Shiraz, Southern Iran (Kalantari et al. 2006). An oral mucosal myiasis has been caused by *Oestrus ovis* in Hamadan, situated 336 km south west of Tehran (Hakimi and Yazdi. 2002). In Shiraz, A case of gingival myiasis due to *Wohlfahrtia magnifica* has been reported (Mohammadzadeh et al. 2008). *C. bezziana* (Diptera: Calliphoridae) has been reported from Khoozestan Province, Southeastern, Iran (Navidpour et al. 1996; Radmanesh et al. 2000). However, to our knowledge this is the first observation of *C. bezziana* as the causative agent of oral and wound myiasis in Fars Province.

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