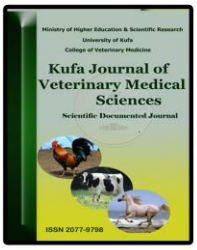
Kufa Journal for Veterinary Medical Sciences Vol.(7). No.(1)B 2016

Kufa Journal for Veterinary Medical Sciences

www.vet.kufauniv.com



Screw-worm*chrysomyabezziana*myasis of native animals in Dyiala provinces 'Iraq

Haleem Hamza hussien Al- zubaidei.
Email: haleem75@yahoo.com

Abstract

The study aimedtodetermine the prevalence of Old world screw fly (OWS) flyinfectionin Diyala province .Iraq. A total of 188 native animals were examine (cattle, sheep, goat, horses)
varying ages in different regions of the province by weekly vests to the veterinary hospital in Diyala during the period from November 2014 to March 2015.The 36 domestic animals were infected from total No. 188 animals examined with percentage rate 20% from the total inspected animals with significant difference $p \leq 0.05$ .The monthly OWS larvae's infection show highly infestation rate in November 44% from total inspected animals while the lowest rate in February was 0% . The animals kinds givevaryingrates of OWS infectionduring the study period. The highly rate in sheep 23% and the lowest rate in goat 12% from the 36 infected animals. And about the body regions the legs show highest rate 53% from the infected animals while the lowest rate in back region in rate 5% only without significant difference $p \leq 0.05$ between the different body regions.
Key words : myasis , chrysomya ,animal, Dyiala

الخلاصة:
هدفت الدراسة إلى تحديد مدى انتشار ذبابة العالم القديم (الذبابة الحلزونية) في محافظة ديالى – العراق . حيث تم فحص 188 رأس من الحيوانات الحقلية شملت (الأبقار والأغنام والماعز والخيول) وبأعمار مختلفة في مناطق مختلفة من المحافظة من خلال زيارات اسبوعية الى المستشفى البيطري في ديالى للفترة من تشرين الثاني 2014 الى اذار 2015.اظهرت الدراسة أصابه36 حيوان حقلي من مجموع الحيوانات الكلية المفحوصة والبالغ عددها 188 وبنسبة اصابة كلية بلغت 20% مع وجود فروقات معنوية تحت $p \leq 0.05$. اظهرت الدراسية الشهرية للإصابة بيرقات الذبابة الحلزونية ارتفاع نسبة الاصابة بشكل ملحوظ في شهر تشرين الثاني بلغت 44% من مجموع الحيوانات المفحوصة بينما كانت اوطأ نسبة لأصابه في شهر شباط بلغت 0% .اعطت الانواع الحيوانية نسب اصابة مختلفة خلال فترة الدراسة كانت اعلاها في الاغنام 23% وأوطأها في الماعز وبنسبة 12% من مجموع 36 حيوان مصاب . اما بالنسبة لأصابه مناطق الجسم فكانت اعلى نسبة في منطقة الارجل 53% بينما كانت اقل النسب في منطقة الظهر مع عدم وجود اي فروق معنوية تحت مستوى.

I ntroduction

The old world screw worm(ows)fly,Chrysomyabezziana (Villeneuve)(Dipteria :callphoridae)is an obligatory parasite of mammalian host throughout Africa and middle east Gulf region ,the Indian subcontinent,south east Asia and new Guinea(**1**) the numerous myiases which affect animals, the New World screwworm (NWS) *(Cochliomyiahominivorax)* and Old

World screwworm (OWS) *(Chrysomyabezziana)* flies are the most damaging. Infestation causes serious morbidity and, if left untreated, mortality.(**2**)

and they give 82% reduction in the weight in sheep (**3**) .The reproductive mature of C.bezziana ,6-8 days old ,female is attract to wound for oviposition , the oviposition occur in the afternoon at three-days intervals .Batch of about 100egg are laid on the upper ,dry side of the wound .with in 16^{th} larvae emergence and burrow deeply into the wound .After 6 to8dayslarvea leave the wound and pupate in the soil .Development rate of immature stage is influenced by environmental temperature ,being slower at low temperature .The pupal stage lasts generally 8to 10days thus the complete cycle takes at least 3weeks.(**4**).The recoded of old world screw worm in to Mesopotamia valley In Iraq in September .The cases of livestock myiasis caused by OWS developed seasonally pattern .The annual cycle of clinical ows cases is explained here on the basis of environmental variable that affect the different life cycle stage s of C.bezziana .This analysis suggests ,that low temperature restricted pupal development during winter, whereas the dispersal of adult flies was constrained by hot dry summer condition ,pupal development was fastest during the autumnmonth, in autumn,rapid multiplication ,in additional low temperature ,the humidity that affected to screw worm .The insect reproduces by laying its eggs in open wound s and mucus membrane of warm blooded mammals . up on the hatching ,the OWS larvae eat the living flesh of the host animals.causing injury,secondary infection and in extreme cases death.(**5**)thus ,A first case was reported of cutaneous myiasis by old world screw worm chrysomyabezziana in camels in Basra province south Iraq in 2006.camels were brought from AL-Zubair city and then to Basra marsh .many larvae from injury in the knee and thigh region which exposed to stress during transportation .(6).Hence ,the study include250 water buffalos from the marsh of Basra during 2006.There 32were positive cases of chrysomyabezziana larvae causes sub coetaneous myiases .This report consider the first record of(OWS) in buffalo .The study showed that foot and mouth disease ,ticks ,lices bite are among many other factor for OWS to but there eggs in small injury and cause myiases in mammals .The study shows C.bezziana larvae was resistant to water environment in which they live.(**7**).The number of myiases detected on animals in most province from 1996sto 2013 are provide .The high numbers of myiases in most province in late of 1990 were followed by lower number and sub sequent apparent elimination in about half of the provinces .myiases were detected mainly in sheep (77.0%)and goat(16.7%).A temporal compares of ows fly detection with traps and animals myiases in Babil province demonstrated a similar sensitivity (**8**) .and in the Iran found the highly infection rated was demonstrated in sheep when examined 986 specimen and geographical races of screw worm fly were identified based on morphological character by using diagnosis key .the study of morphological characters of old world worm flies population of south western Iran suggested that specimen are the same with Arabian race characters and demonstrated that the outbreak of C.bezziana in Iran related

to population that originated from Arab countries of the Persian Gulf like united Arab Emirates.(**9**).the Outbreaks in areas where screwworm has already beeneradicated divert costly programmed resources and slow progress southward,and are considered emergencies. Some problems encountered and the solutionsfound during the height of the eradication programme in Mexicowhich are required to control or eradicatescrewworms. Programs for this highly mobile parasite encompass largegeographic areas and consequently require active and continuous internationalparticipation**.(10)** The dispersal of the insect is primarily influenced by the vegetation cover and the availability of woundssuitable for oviposition by females(**11**) Recent studies of OWS dispersal activity in the Mesopotamia Valley show that despite the seasonal fluctuation in overall OWSpopulations, they always remain within well vegetated areas In essence(**12**) this results inthe OWS being mainly dispersed along the Euphrates and Tigris RiversThrough the analysis of datafrom capture and release experiments The result of this process is that the OWS population is pulled into areas where availability is higher andvegetation cover is more favourable. In oman The Old world screwworm(OWS), Chrysomyabezziana seems to be widespread infesting goats and sheep throughout theSultanate. The overallinfection percentage with OWS myiasis in goats was 87.7% and in sheep was 12.3%. Cases have been reported all the year round,but the outbreaks was mostly common during the cooler months (January-May) with peak foci during (March-April) in whichthere is a suitable weather of humidity and rain for the growth and development of the larvae.(**13**) ,(**14**) the annual costs incurred by the parasite in thesouth-western USA were estimated at US$100 million At the time of eradication in Mexico, savings due toeradication in that country were estimated at millions a year. Costs of reinfestation by NWS in the USA, if allowed tospread, have been estimated more recently at US$453 million a year. (**15)**

Material and method

A total of 188 native animals were examine (cattle, sheep, goat , horses) varying ages in different regions of the Diyala provinceby 2 Visited weeklytothe outpatient clinicfor veterinaryhospitalin Diyaladuring the period fromNovember 2014toMarch 2015 .to determine themost species of flies causing myiasis. the animals were wounded on different sites of their bodies. The flylarvae were removed from infested host animals using forceps and they were first killed by putting them in hotwater. Then they were transfared into test tubes which contained 70- 80% alcohol and sent to parasitology laboratory of College of Veterinary Medicineto their identification. The larvae were directly prepared and kept in a petri dish and the identification was carriedout under the binocular microscope (X50 magnification) according to the characters described by(**14**)

Morphology of the third instar larvae:

Plates (3-8) show images of the morphology of 3rd. instar larvae of C. bezziana, these are the most commonfeatures (posterior and interior spiracles, spine bands and tracheal trunks of the larvae) which distinguished thisspecies of myiasis from others. with digital DP 71 Olympus camera(4X).

Result and Discussion

The (**ows**) fly wide distribution in Iraq province'sspecially in medial and south areas of government sense 1990 .in Dyialaprovinces' the 36 domestic animals were infected from total no 188 animals examined with percentage rate 20% from the total inspected animals (table 1).

Table (1) The total rate of infected animals in Diyalaprovinces

Total no .of animals	Total infected animals	%
188	36	20

.

The monthly (**ows**)infction show highly infestation rate in November 44% from total inspected animals, followed by December , January ,and march (15, 15, 8) respectively . while the lowest rate in February was conducted 0% withsignificant difference $p \leq 0.05$. (table 2)(Scheme1) the other study show that low temperature restricted pupal development during winter, whereas the dispersal of adult flies was constrained by hot dry summer condition ,pupal development was fastest during the autumn month, in autumn ,rapid multiplication ,in additional low temperature ,the humidity that affected to screw worm(5)

Table (2)Monthly(OWS) detected cases in Diyalaprovines during period of study

month	No. of animals	infectedanimals	%
November	50	22^{A}	44
December	58	9^{B}	15
January	20	3^{B}	15
February	33	0^{B}	0
March	27	2^{B}	8
total	188	36	20

The animals kinds givevaryingrates of(OWS)infectionduring the study period. The highly rate in sheep 23% followed by horse , cattle (20, 18) respectively while the lowest in goat 12% with significant difference $p \leq 0.05$ (table 3)(Scheme2) in Babil province demonstarted a similar sensitivity myiases were detected mainly in sheep (77.0%)and goat(16.7%).(8)

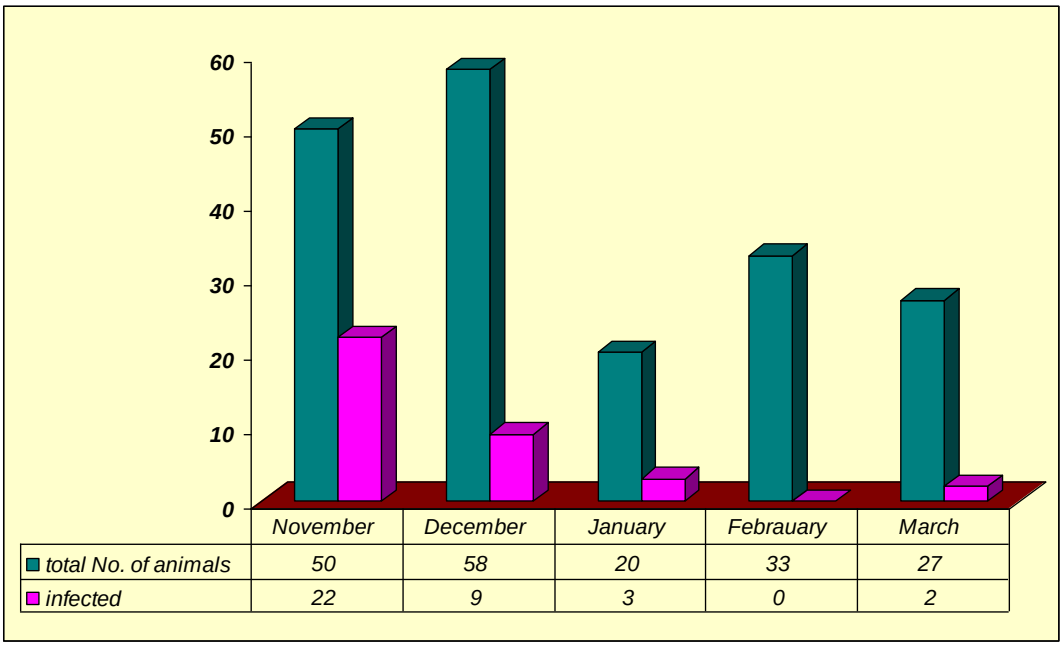
Table (3) the infected animals rate during the study in the diyalaprovines

Kind of animal	No of animal	No . of infected animal	Percentage rate %
cattle	50	9^{B}	18
sheep	100	23^{A}	23
goat	25	3^{B}	12
horse	5	1^{B}	20
total	188	36	20

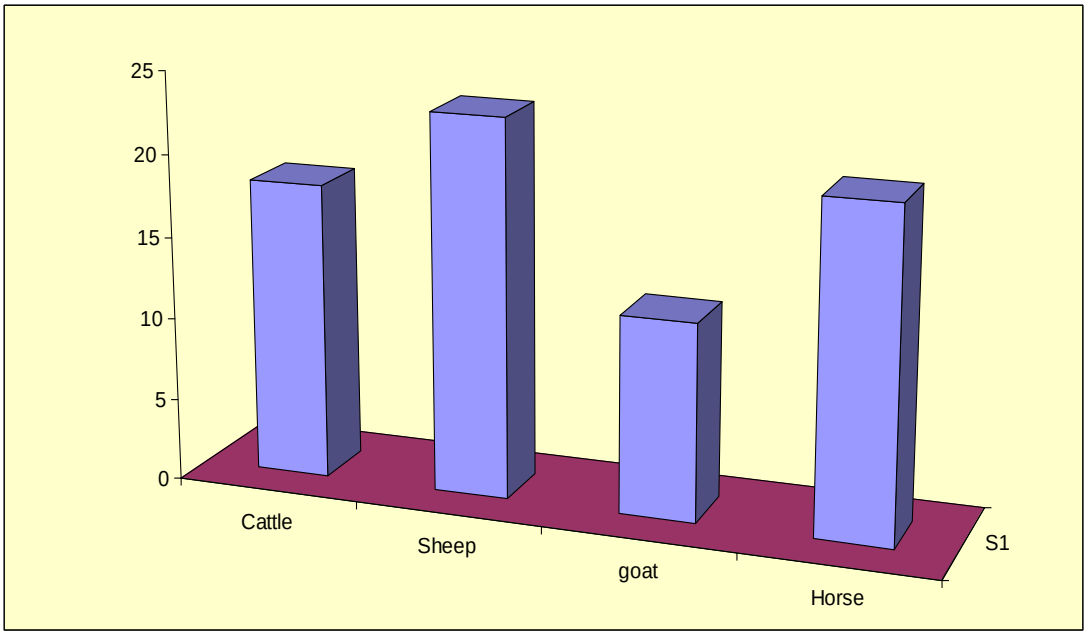
The OWS larvaes detected in many body areas depending in wound and other abrasion on animal skin . the legs show highest rate 53% from the infected animals followed by head , abdomen in rate(30, 11) % respectively . while the lowest rate in in back region in rate 5% only with no significant difference $p \leq 0.05$.(table 4)(Scheme 3) (figure 2,3,4,5) . we thought that the legs are more exposure to injury and scratches from other parts of the body in addition to that the posterior region of the legs usually wet because of the uterine discharge after birth and repeated Diarrhea which attracts the OWS insect to lay eggs in this wetted region.

Table (4) The OWSlarvaes infection according to the body regions

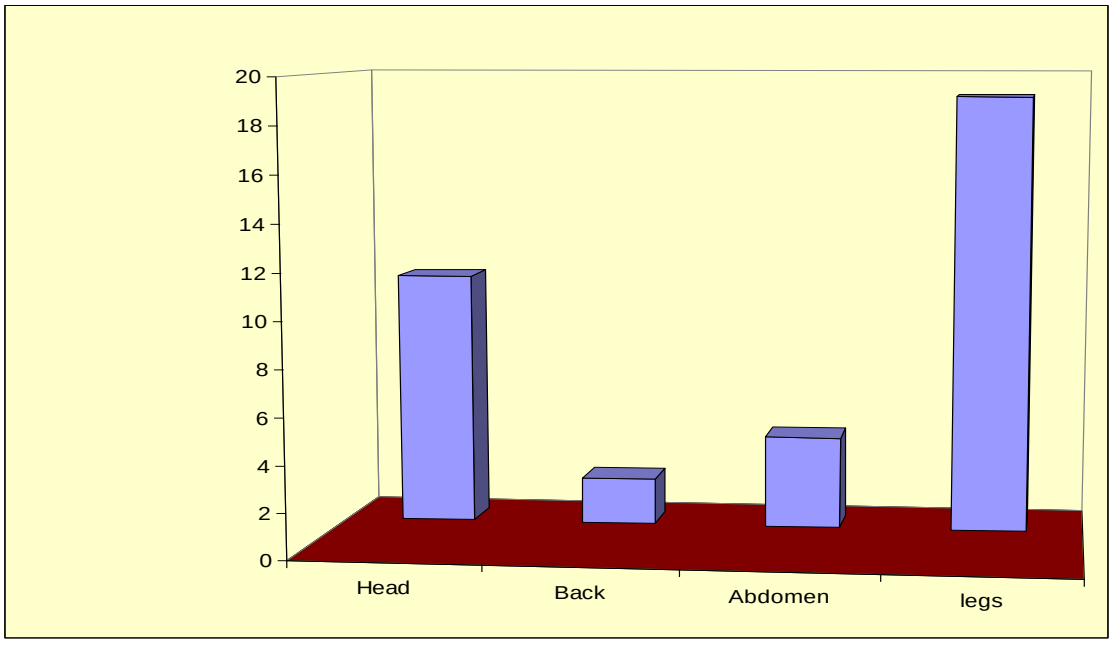
Infected area	No. infected animal	Percentage rate %
Head	**11^{A}**	**30**
Back	**2^{A}**	**5**
Abdomen	**4^{A}**	**11**
Legs	**19^{A}**	**53**
Total	**36**	**100**



Scheme(1)Monthly OWS detected cases in Diyalaprovines during the study



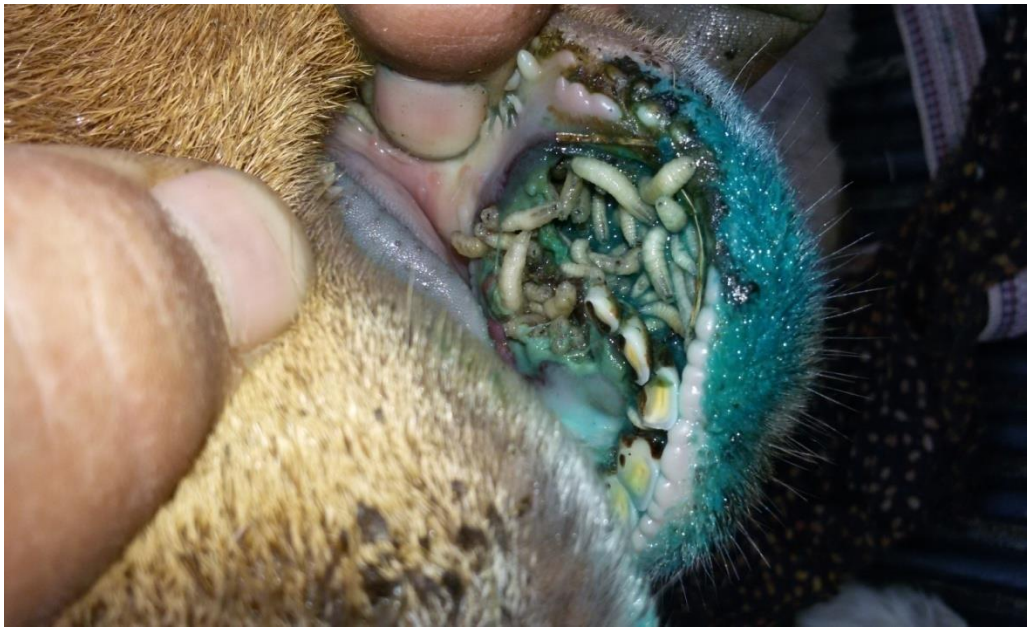
Scheme(2)infected animals rate during the study in the diyalaprovines



Scheme(3)The OWS larvaes infection according to the body regions

Figure (2) sheep infected withOWS larvae s in head rigion

Figure(3) calf infected with OWSlarvaes in umbilical region



Figure(4) goat infected with OWSlarvae's in mouth cavity

Figure(5) the sheep leg infected with OWS larvae

Reference

1- **Spradbery ,J,P.**(1994)screw –worm fly :a tale of two species .Agric .zool. Rev .6,1-62 .

2- **Hoelscher C.E.** (1990). - Screwworm eradication in theAmericas: a threat of screwworm reinfestations. In Proc.Texas Southwest Cattle Raisers Convention, 113th AnnualConvention, 26 March, Fort Worth, Texas. 6 pp.

3- **Sukarsih ,Partoutomo ,S.Satria,E.Wijffels,G.Riding,G**(2000)Vaccination against the world scrow wormfly (chrysomiabezziana).Parasiteimmunol ogy.Vol.22,No.545-552.

4- **De deken ,R**.(2008)Old world screw worm (chrysomiabezziana).Eazwvtransmissi ble diease fact sheet No.122

5-**Siddig,A.Aljowary,s. AlIzzi,M.Hopkins.j.Hall,M,J,R**(2005) seasonality of oldworldscrow worm myiasis in the Mesopotamia vally in iraq ,Medical and veternary entomology vol19.No .140 -150

6-**Al-helfi,M ,A,M,A**(2008)epidemiology of larvae of chrysomyabezziana in buffalo in **B**asra province ,south of Iraq. Marina mesopotami ,vol. 23, No.1;19-252

7- **Al- helfi ,M,A.M. Al-Jassim,K,BandZainb,M.Salam**(2012) ACase report of cutanousmyiasis by chrysomiabezziana(OWS) in Camel at basra province.Bas.J.Vet.Res.Vol.11,No.2

8-**Altaweel,A.A,Okaily, R.A,Salman,Q.S,Al-Temimi,F.A,Al-adhadh**(2014)Relativeperformance of surveys for the old world scrow worm fly chrysomyabezziana ,in iraq based on fly trapping and myiasis.Acta tropic1385 No.s56.

9- **Navipour,S,H.Goudarzi ,M .A ,Gholamiyan,A.andJahanifard**(2009) Geographic race of old world screw-worm fly ,chrysomyabezziana Villeneuve ,1914,in south-western Iran .Journal of biological

10- Reichard,R(1999)Case studies of emergency management of scrow worm ,Rev .sci. tech.off.int.Epiz;18(1),145-163

11-Welch, M . Kwan ,P(2013)A high performance Agent-Based simulation of old world scrow worm Fly life cycle and Dispersal using a Graphics prcessing unit (GUP)platform,20th internationalcogres sonModelling and simulation,Adelaid,Australia

12- **Mayer, D., Atzeni, M., Swain, A., & Stuart, M**. (1995). Models for the spatial dispersal of insect pests.*Environmetrics, 6*(5), 497-503.

13- **Oman . M.J** (2008)Prevalence of old word scew –worm ,chrytsomyabezziana in small ruminants from different regions in oman .Agricultural and livestock Research –Annual report .

14- **Atzeni, M., Mayer, D., Spradbery, J., Anaman, K., & Butler, D.** (1994). Comparison of the predicted impactof a screwworm fly outbreak in Australia using a growth index model and a life-cycle model.*Medical and Veterinary Entomology, 8*(3), 281-291.

15- **Al-Helfi, M.A.M.** 2001. Taxonomical and Ecological studies of the medicalinsects (Order: Dipteera) caused myaisis in Basrahprovience, withamention to its control (Athesis).

16-**Office International des Epizooties (OIE)** (1999). - NewWorld screwworm *(Cochliomyiahominivorax)* and Old Worldscrewworm *(Chrysomyabezziana). In* International AnimalHealth Code: mammals, birds and bees, 7th Ed., Chapter3.1.8. OIE, Paris, 147-