

قسم التشريخ والهستولوجيا ،  
كلية الطب البيطري - جامعة أسيوط  
رئيس القسم : أ.د/ حلمي بدوي •

### علاقة الاكياس الزلالية بنوع العمل في الحمار

عبدالله حفني ، علي عبدالقادر ، اسماعيل عبدالعزيز ، محمد طه

أجري هذا البحث على <sup>عدد</sup> ٥ حيوانات ركوب ، ٤ حيوانات حمل أثقال ، ٨ حيوانات  
جر جمعت من محافظتي أسيوط وسوهاج • وبعد أن أعدمت هذه الحيوانات عن طريق قطع  
الشريان السباتي العام حقنت بمادة الفورمالين (١٠%) ثم بعد ١٢ ساعة حقنت الأكياس  
الزلالية بمادة المطاط لدراسة المواصفات التشريحية لها ولقد وجد أن العمل ونوع الشغل  
الذي يؤديه الحيوان له تأثير كبير على ظهور تلك التراكيب الزلالية ولكن وجد أن هذا  
التأثير بسيط على الأكياس الزلالية الموجودة في القوائم بينما تأثيرها واضح وكبير على  
ما هو ناشئ على ظهر الحيوان ففي حيوان الركوب وجد أن الأكياس الزلالية غالبا تنشأ  
على النصف الخلفي من شوكات الفقرات الظهرية ووجد أن تلك الأكياس الزلالية صغيرة  
الحجم ولم يحدث التحام بين أي كيس زلالي وآخر هذا بالإضافة الى أن العدد لا يزيد عن  
اثنين فقط •

في حيوان حمل الأثقال لوحظت الأكياس الزلالية تحت جلدية على شوكات النصف  
الأمامي من الفقرات الظهرية وعددها يتراوح من ٢ - ٨ وحجمها أكبر وأحيانا يحدث التحام  
بينهما • أما في حيوان الجر ف لوحظ أن هذه الاكياس الزلالية موجودة على شوكات الفقرات  
العجزية والنصف الأمامي من الفقرات الصدرية وانها أكثر التحاما •

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**THE RELATION OF THE SYNOVIAL BURSÆ TO THE WORK  
OF THE DONKEY  
(*Equus asinus*)  
(With 3 Figs.)**

By  
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**SUMMARY**

The number and size of the synovial bursae in donkey vary according to the type of work of the animals.

The light worker animals have two small subcutaneous supraspinous bursae located on two spines of any of the vertebrae of the caudal half of the thoracic region.

The hard worker animals have 2-8 subcutaneous supraspinous bursae located on the spines of the cranial thoracic region. Moreover there is a slight degree of connection between the adjacent bursae in some cases.

In draft donkeys the subcutaneous bursae are located on the spines of the sacral and cranial thoracic regions, their number is relatively smaller than those of the hard worker but they are longer and more extended than those of the light worker animals.

**INTRODUCTION**

Whenever one structure moves over another, friction is generated unless there is some means of prevention. The nature of work of donkeys causes a greater degree of friction of the skin of the back than that of the limbs. Therefore, the aim of this work is to show the relation of the subcutaneous supraspinous bursae and the type of work of donkeys.

**MATERIAL and METHODS**

This work was carried out on 17 adult donkeys performed a certain work along their life; 5 light workers (saddle donkeys), 4 hard workers/used in fields for carrying the crops and equipments from place to another (rotation of noriare and water wheels for irrigation of fields), and 8 draft donkeys. These donkeys were collected from Assiut and Sohag Provinces. The animals are bled and injected with formalin (10%) through the common carotid artery, then the bursae were injected with Gum milk (latex). Moreover the bursae of some specimens were injected with radioopaque materials (Barium sulphate 40% and urografin (76%).

The nomenclature of the bursae is that adopted by Nomina Anatomica Veterinaria (1983) whenever if it was possible.

## RESULTS

The occurrence, shape, situation and degree of fusion of subcutaneous bursae along the back of adult animals vary according to the degree of work.

### 1- light workers:

In light worker donkeys the bursae are few and small in size, (Fig. 1). They are usually 2 in number but in one case three bursae were observed. These bursae are located subcutaneously on two spines of any vertebra of the caudal half of the thoracic region, however, they may extend cranially to be located opposite the 8<sup>th</sup> thoracic spine or caudally opposite the 1<sup>st</sup> lumbar spine. This may be due to the saddle pressure which might be applied cranially or caudally to these levels.

### 2- Hard workers:

The bursae of the back of the hard worker animals have many characteristic features (Fig. 2). They are localised on the spines of the cranial thoracic region, but may extend to the caudal thoracic region, and in one exceptional case it extended on the cranial half of the lumbar region. Moreover, the spines of the sacral region of the back did not show any subcutaneous bursae. The degree of the extension from the cranial thoracic to the cranial lumbar varies according to the type and period of work which is carried out by the animal concerned. The number of these bursae ranged from 2-8 and, in some cases there is a slight degree of connection between them. These features are not observed in light worker animals. When the degree of fusion is large, the number of the bursae is small. Therefore in an animal which has only 2 large bursae, each bursa is localised opposite 3 or 4 spines. On the other hand, when there is no or slight degree of fusion, the bursae are small and each lies opposite one or two spines.

### 3- Draft animals:

The bursae of the draft animals are situated in relation to the nature of their work on the spines of the cranial thoracic (Fig. 3 a) and sacral (Fig. 3 b) region but may extend to the caudal thoracic and cranial lumbar regions. The degree of fusion of the bursae is more prominent than that of the hard worker animals. The fusion of the bursae may result in 9 bursae which lies opposite the 7<sup>th</sup> thoracic to the 1<sup>st</sup> lumbar spines (opposite 13 spines). In general the bursae are found in the thoracic and sacral regions, however, sometimes in the lumbar region opposite 2-3 spines. Due to the fusion of the bursae in the draft animal as well as their great extension on the spines of the back their number is relatively smaller than those of the light and hard workers but larger.

Although the nature of the work has a minor effect on the bursae of the limbs, certain bursae are observed in relation to the type of work. In hard worker animals the following bursae were recorded; *B. subcutanea inchiadica*, *B. ischiadica m. semitendinosi* and *B. subcutanea os tarsale IV*. Some bursae are observed only in draft donkeys these are; *B. subcutanea proximalis lig. collaterale cubiti laterale*; *B. subcutanea proximalis lig. callaterale carpi laterale*, *B. m. subclavius*. Only in hard and draft donkeys the following bursae were recorded; *B. subligamentosa nuchalis cranialis*, *B. subligamentosa nuchalis caudalis*, *B. subcutanea trochanterica tertis*, *B. subcutanea malleoli lateralis*. In light worker animal all the previously mentioned bursae were not recorded.

## THE RELATION OF THE BURSAE TO THE WORK

### DISCUSSION

OTTAWAY / WORDEN (1940) and SEIFERLE / FREWEIN (1986) stated that in horse subcutaneous bursae on the spines of 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> thoracic, 1<sup>st</sup> and 2<sup>nd</sup> sacral vertebrae are observed. The latter author named the observed subcutaneous thoracic bursae, subcutaneous bursae of the wither, while those on the sacral spines, subcutaneous sacral bursae.

The present work showed that the occurrence, size, shape, situation and degree of fusion of the bursae vary according to the type of work of the animal. The light worker animals have two small sized subcutaneous supraspinous bursae located on two spines of any of the vertebrae of the caudal half of the thoracic region.

The bursae of the back of hard worker animals are 2-8 in number; localized on the spines of the cranial thoracic region. There is a slight degree of fusion of adjacent bursae unlike that of the light worker animals.

The subcutaneous bursae of the back of the draft animals are situated on the spines of the sacral and cranial thoracic regions. Their degree of connection is prominent and the bursae appear to be larger than those of light and hard workers.

### REFERENCES

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- Ottaway, C.W. and A.N. Worden (1940): Bursae and tendon sheaths of the horse. Vet. record Vol., 52, No. 26.
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### LEGEND OF FIGURES

- Fig. (1):** Latex casts of the subcutaneous supraspinous bursae of the back of the light worker donkey (Lateral view) showing: subcutaneous supraspinous bursae on T<sub>11</sub> and T<sub>15</sub>.
- Fig. (2):** Latex casts of the subcutaneous supraspinous bursae of the back of hard worker donkey (lateral view) showing. subcutaneous supraspinous bursae on T 4, 5, 6, 8-9, 11-13, 15-16, 17-18.
- Fig. (3 A):** Latex casts of the subcutaneous supraspinous bursae of the back of draft donkey (Lateral view) showing: Subcutaneous supraspinous bursae on T<sub>4-5</sub>.
- Fig. (3 B):** Latex casts of the subcutaneous supraspinous bursae of the sacral region of draft donkey (Dorsal view).

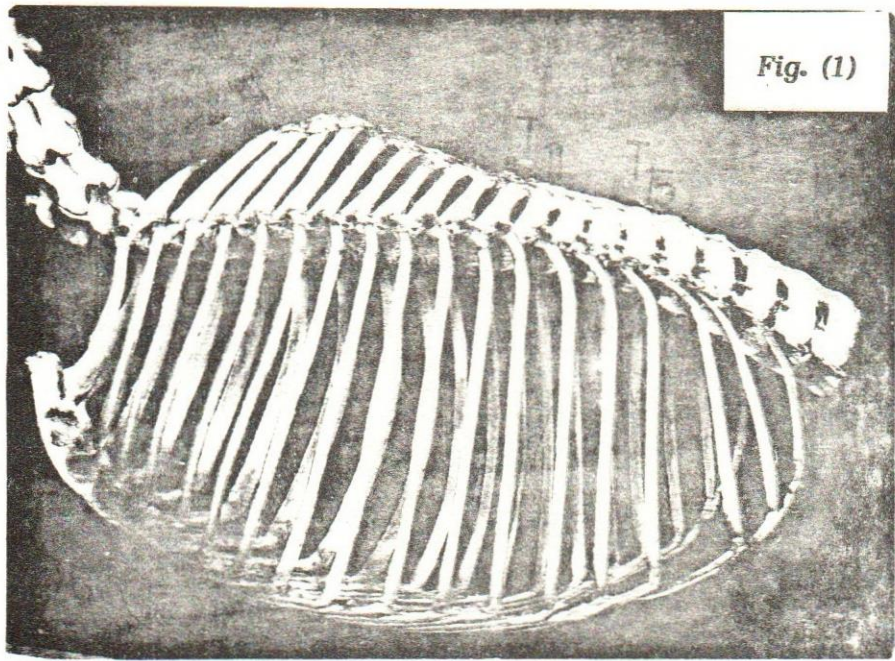


Fig. (1)

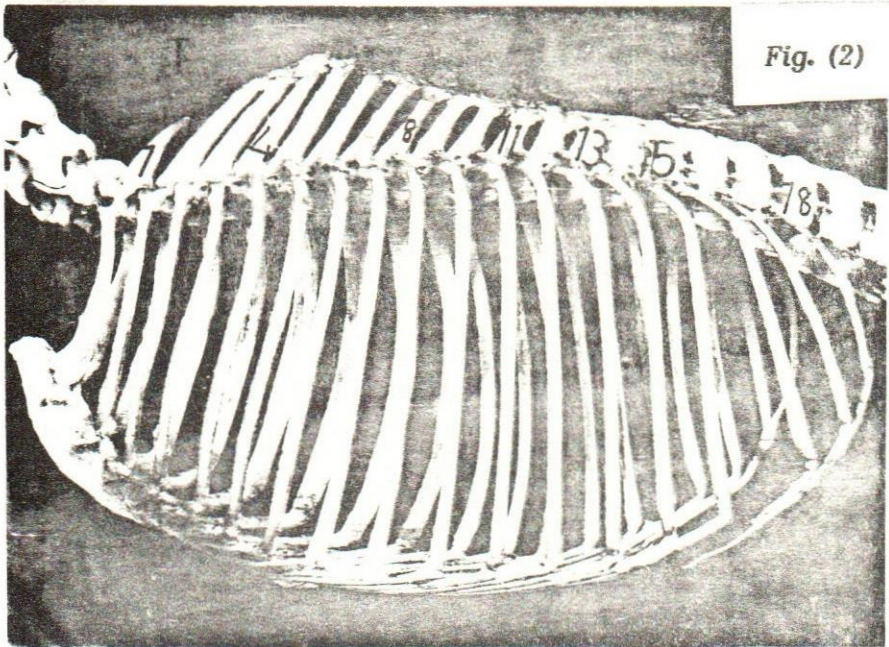


Fig. (2)



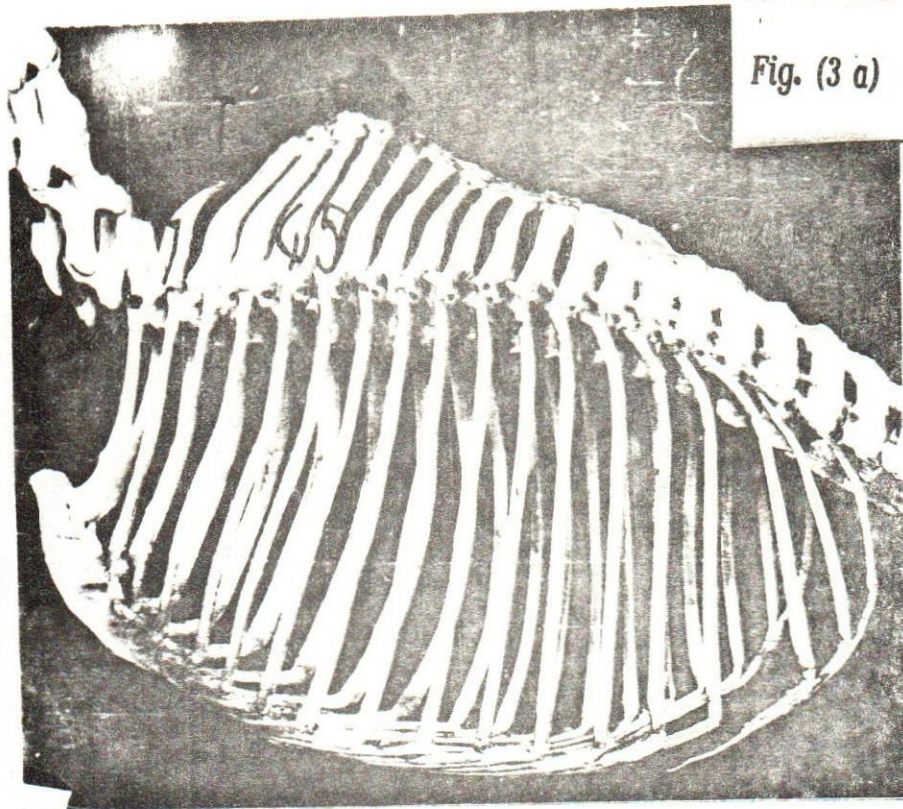


Fig. (3 a)

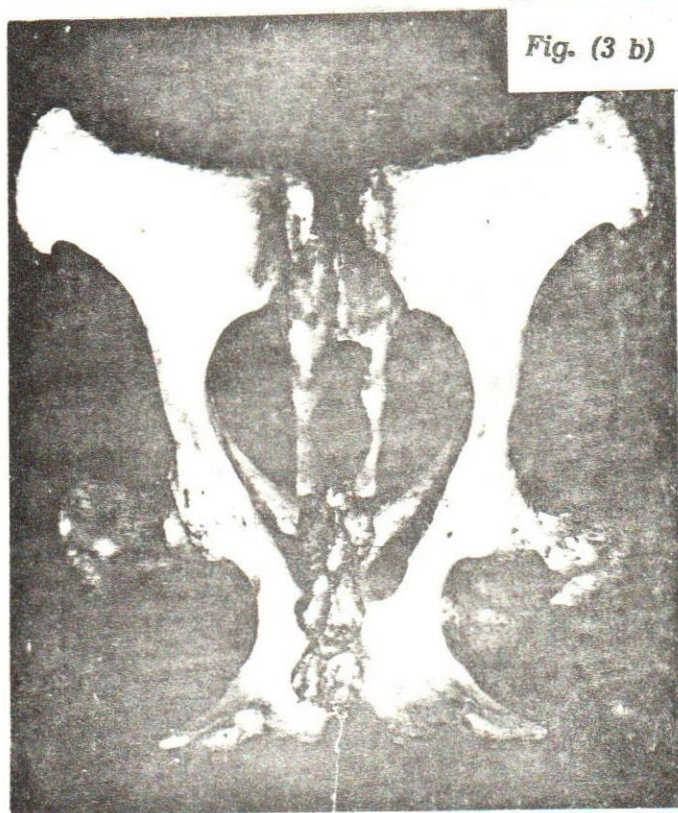


Fig. (3 b)

