

الاستئصال الجراحي التجريبي  
للحوصله المرارية ومعص فصوص الكبده فى الكلاب

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أجريت الجراحة التجريبية للاستئصال الحوصله المرارية والفص اليميني المتوسط  
والفص المربع لعشيرة من الكلاب . وقد أجريت كل العملية تبعدون أى ترتيبات  
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A CONTRIBUTION TO EXPERIMENTAL CHOLECYST-LOBECTOMY  
IN DOGS.

(With One Table)

By

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SUMMARY

Experimental cholecyst-lobectomy was tried in 10 dogs. The right medial and the quadrate lobes which lie close to each other enclosing the gall bladder were excised. All operations were performed without prior preparation of the liver tissue or vessels. It was effected merely by ligating the pedicle of the lobes. The animal withstood the operation well and showed no serious post-operative effects. Blood cytology (R.B.Cs., W.B.Cs., total count per mm differential leucocytic count percent Hb concentration and blood sedimentation rate) were investigated before and after operation for 45 days.

INTRODUCTION

Veterinary literature lacks information on the type of liver resection to be performed in dogs for experimental purposes. However VUKELIC (1966), EL-AMROUSI et al. (1971) and MONZALY et al. (1974) described their surgical approaches for partial hepatectomy and cholecystectomy in the dog respectively. EL-GUINDI et al. (1969) in a series of allogenic canine liver homotransplantation reported their technique for total hepatectomy.

The surgical intervention on the liver as an organ of highly complex physiological functions and intricate anatomical structure, was always counted among the difficult and

Assiut Vet. Med. J. Vol. 4 No. 8, 1977.

scissors about half cm. peripheral from the ligature. The abdominal wound was closed in the usual manner.

#### Haematological study:

Blood samples with EDTA were collected from the cephalic vein at the following intervals: before, 5, 10, 20 and 45 days post-operation. Samples were examined for total blood cells count. Hayem's and Turk's solutions were used for dilution of red and white cells respectively. Blood samples were counted using the bright line improved Hewbaur chamber. Haemoglobin concentration was determined (in gram %) by the agency of Sahli's haemometer whereas sedimentation rate was carried out using Westergren method (MEDWAY, 1969). In addition, two fresh blood films were taken from each dog and stained by the panoptic method of Papenheim (HALIMAN, 1958) and 400 cells were differentiated by the four field meander method (SCHALM, 1961).

The results were statistically analysed using the student "t" test (SNEDECOR, 1956).

#### RESULTS

All the operated dogs sustained well the surgical intervention and manifested no post-operative complications in the course of the experiment that lasted for 45 days. Temperature, respiration and pulse rate showed insignificant changes. Appetite, urination, defaecation and general behaviour of the dogs were not greatly affected.

Primary intention healing has been achieved in all animals and the stitches were removed 8-10 days after operation.

#### Haematological Investigations:

The results of before and after operation are presented in table (1). As illustrated a significant decrease in

Assiut Vet. Med. J. Vol. 4 No. 8, 1977.

total R.B.Cs. count and consequently Hb content occurred after operation, this reduction persisted for two weeks. On the contrary, marked increase in the sedimentation rate leucocytic count was noticed that persisted for longer period (sedimentation rate for 20 days and W.B.Cs. count for 45 days). It is evident that the increase in W.B.Cs. reached its maximum after 10 days post operation and then gradually decreased, with regards to the differential leucocytic count, the obtained results showed that polysegmented neutrophils and stab cells were greatly increased after operation with a parallel reduction in the lymphocytes. These changes were clearly manifested for about 20 days post surgery after which they gradually restored their normal limits by the end of the experiment. A slight decrease was noticed in monocytes only 10 days post-operation which was quickly improved on the 15<sup>th</sup>; day.

#### DISCUSSION

As regards to the surgical procedure the paramedian laparotomy incision cited to the right side from the linea alba facilitated the approach to the liver. The placing of the animal with raised front part of the body produced a caudal retraction of the intestine and hence added to the better exposure of the area of the liver.

No difficulty caused by bleeding was encountered. By placing the ligature around the pedicle of the lobes, the thread gathered the blood vessels and tied them together. As the tying and tightening of the ligature made the thread to cut through the parenchymatous tissue it becomes so well settled in position that it could not slide. The ligature tied in one act the hepatic artery and vein, the portal vein and the bile duct without causing loss of blood. Such placing of the ligature permitted to avoid the difficult and often

dangerous dissection of tissues and hepatic blood vessels that may cause haemorrhage. In lobectomy for experimental purposes MARKO et al. (1959); advised careful dissection of tissue and blood vessels at the root of the lobe which was grasped with two haemostatic clamps. The blood vessels which are between the clamps and the stumps are ligated. It is worthy to state that the operation carries the risk of frequent profuse bleeding and a high operative mortality rate. Hence, the present technique was carried out to prevent these short coming complications.

Haematological picture become of great importance in the study of any patho-physiological condition (ZIETSEV, 1971 and SCHALM, 1975). Of these cholectomy syndrome occupies a significant place as far as the available literature lacks informations about the sequellae of such surgery. The alteration in the leucocytic picture in our experiment could be attributed to the defence mechanism occurring against inflammatory changes after surgical operation. This was clearly shown from the increased leucocytic count and the high percent of poly-segmented neutrophils and stab cells. In this respect, our results agreed with BURRET and SCHIELD (1958); SIMONS, (1973); BONDVAL (1973); JUDD and MAN(1974) and MONZALY et al. (1975). On the other hand, the decrease in R.B.Cs. count and Hb concentration could be explained by the slight haemorrhage during surgery.

The increase in the sedimentation rate after surgery could be attributed to the inflammatory process and expected disturbances in the liver function resulting from cholecyst-lobectomy. Parallel with the decrease in R.B.Cs., the sedimentation rate was increased. This could be correlated with the decrease in the electric changes of the R.B.Cs. which coincide with the findings of COLES, (1968); MEDWAY, (1969); ZIETSEV

Assiut Vet. Med. J. Vol. 4 No. 8, 1977.

## ANATOMICAL CONSIDERATIONS

- 257 -

et al., (1971): and SCHALM, (1975). The persistent leucocytosis gives an indication for the severity of the damage caused by cholecystectomy and hence the great need of W.B. Cs. to overcome the resulting inflammatory process in the liver tissue. This quality agreed with MELANOV et al. (1973)

### REFERENCES

- Bandval, B. (1973): The post cholecystectomy syndromes. *J. Clin. Gastroentrol*, 2: 103 - 126.
- Burnett, W.R. and Shields, R. (1958): Symptoms after cholecystectomy. *Lancet*, I : 923 - 928.
- Coles, E.H. (1967): *Veterinary clinical pathology*. W.B. Saunders Company, Philadelphia and London.
- Dacie, J.V. and Lewis, S.M. (1975): *Practical haematology 5th Ed.* Eng. Lang Book Society, England.
- El-Amrousi, S.; M. El-Guindi; M. El-Monzaly and A. Mottelib (1971): Experimental studies on partial hepatectomy in dogs: 1- Surgical procedure and alteration in serum transaminases. *J. Vet. Sc.* 8 : 17 - 24.
- El-Guindi, M.H., H. Badawi, M. Abd El-Aleem and Mesk, N. (1969): Allogenic heterotopic canine liver homotransplantation : I. A technique for total hepatoectomy. *Zbl. Vet. Med. A.* 15, 833 - 837.
- Hallman, R. (1958): Cited by Medway; Philadeandiwilknswn (1969).
- Judd, E.S. and Mann, F.G. (1971): The effect of removal of the gall bladder: An experimental study. *J. Surg. Gynec. Obstet.* 24: 437 - 439.
- Medway, W.; Philer, J.E. and Wilkinson, J.S. (1969): *A textbook of Vet. Clinical Pathology*. Balliere, Tindall and London.
- Milanov, O.B.; Sedarov, A.A. and Kazanov, A.M. (1973): Resection of the liver (Review of literature) *J. Khirurguo U.S.S.R.*, 49: 141 - 146.
- Assiut Vet. Med. J. Vol. 4 No. 8, 1977.

- Monzaly, M. El-M., Raghieb, M. F.; Amer, A. and Tantawy, M. (1975): Surgical approach to cholecystectomy in dogs ( In Press ).
- Sohalm, O.W. (1961): Veterinary haematology 2<sup>nd</sup>. Ed. Febiger, Philadelphia.
- Schalm, O.W. Jain, N.C. and Carroll, E.J. (1975): Veterinary Hematology 3<sup>rd</sup> Ed. Lea. and Febiger Philadelphia.
- Simons, F. R. (1972): Alteration in hepatic bile composition after cholecyst-lobectomy. J. Gastroenterology 63: 466 - 471.
- Smith, H. A.; Jones, T. C. and Hunt, R. D. (1972): Veterinary Pathology 4<sup>th</sup>. Ed. Lea and Febiger. Philadelphia.
- Snedecor, G. W. (1956): Statistical Methods 4<sup>th</sup>. Ed. John. Wiley and Sons, New York.
- Vukelic, E. (1966): A technique for experimental resection of the liver in dogs. Zbl. Vet. Med. A. 2, 97 - 101.
- Markowitz, J.; J. Archibald and H.G. Downie (1959): Experimental Surgery, London.
- Zietsev, V.E.; Cinev, A. V.; Lonov, P.C.; Vacillev, A.V. and Sharabrin, I.G. (1971): Clinical Diagnosis of Internal Diseases of Domestic Animals 3<sup>rd</sup>. Ed. Kolus Press, Moscow.



Table (1) : Haematological picture in consequence to cholecyst-lobectomy in dogs.

	Before operation	After operation				
		5 days	10 days	15 days	20 days	45 days
R.B.Cs ( $10^6/c.mm.$ )	6.86 ± 0.09	5.82 ± 0.19	5.93 ± 0.21	6.13 ± 1.36	6.23 ± 1.81	7.03 ± 0.25
Hb (gr %)	13.8 ± 0.51	12.3 ± 0.65	12.5 ± 1.12	13.0 ± 1.06	13.8 ± 1.13	14.3 ± 0.98
W.B.Cs. ( $10^3/c.mm.$ )	16.4 ± 0.89	21.3 ± 1.31	36.0 ± 1.73	33.2 ± 1.39	28.3 ± 1.18	21.3 ± 1.29
Sedimentation rate/hour	1.1 ± 0.06	2.1 ± 0.05	2.3 ± 0.07	2.1 ± 0.09	1.8 ± 0.08	1.5 ± 0.04
Stab cells %	0.3 ± 0.12	3.0 ± 0.99	3.4 ± 0.22	3.8 ± 0.59	1.0 ± 0.99	1.6 ± 0.12
Polysegmented neutrophils						
ils	65.0 ± 2.29	75.6 ± 0.92	74.4 ± 1.04	72.4 ± 0.97	69.4 ± 1.20	6.7 ± 1.07
Lymphocytes %	22.6 ± 1.12	13.2 ± 1.16	14.8 ± 0.92	15.0 ± 0.99	19.8 ± 2.17	20.2 ± 0.81
Monocytes %	6.6 ± 0.97	5.2 ± 0.45	4.4 ± 0.39	5.6 ± 1.73	6.4 ± 0.74	5.2 ± 0.80
Eosinophils %	5.9 ± 0.23	3.6 ± 0.70	3.0 ± 0.99	3.8 ± 0.64	4.2 ± 0.39	5.4 ± 0.50
Basophils	— ± —	— ± —	0.2 ± 0.20	— ± —	— ± —	0.2 ± 0.20

± = Standard error.    P / 0.05    P / 0.01    P / 0.001

