الأنساد التجبري لمجرى البول في الكبد

الصرع الكيميائية والبيولوجية

أحمد عامر، نبيل سكك، تطع العلياوي، حمدي سالم

استند البحث إلى دراسة الصورة الكيميائية والبيولوجية في أربعة كلاً بعد الانتفاخ التجريبي النانو لقنعة مجرى البول. وقد جمعت مسحات من مجرى البول قبل بدء التجربة وخلال 12 ساعة بعد الانتفاخ على التوالي. وقد أظهرت النتائج النتائج التالية:

1. زيادة ضغط الدم في مستوى مجرى البول والأنساد الغير بروتيني في الدم ومستوى الكرياتينين والبوتاسيوم والفسفور الغير ضى في صل الدم. واستمرت هذه الزائدة حتى النفق.
2. لم تتأرجح مستوى الصوديوم في صل الدم خلال هذه التجربة. كانت النتائج بمثابة إنجاز بالممارسة والنظرية في نهاية التجربة.
3. ظهرت التغيرات البيولوجية المصاحبة للتصميبيي الحيوانات وذلك عند أخذ صحة التشريحية أو عند الفحص البيروسي.

العينات الأشعة الداخلية المتفاوتة
URETHERAL OBSTRUCTION IN RAMS (EXPERIMENTAL STUDY)

II. CLINICOPATHOLOGICAL PICTURE

(With 2 Tables & 6 Figures)

By

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SUMMARY

The urethra of four rams were completely occluded to study the possible biochemical changes of blood and blood serum following this operation. Samples were collected before and at every 12 hours post-operation (P.O) till death. Necropsy was performed and vital organs were examined histopathologically.

The study revealed:
1. Progressive increase of B.U.N., B.N.P.N., serum creatinine, potassium and inorganic phosphorus levels. The increase was proportional to the time elapsed post operation.
2. Changes in serum sodium levels were not significant.
3. Characteristic lesions of uraemia were observed macro and microscopically.

INTRODUCTION

In a previous report (MISK, ALLAWY, SALEM and AMER, 1979), it was concluded that experimental ligation of the urethra in four rams raised the pulse and the respiratory rates in relation to time post-operation (P.O). Experimental animals demonstrated lowered blood haemoglobin and haematocrit values. The present work investigated, in addition, the effect of experimental urethral ligation on some biochemical changes of blood and serum. Morphological changes of vital organs of dead rams were also studied.

MATERIAL AND METHODS

Surgical technique for experimental obstruction was previously described by MISK et al. (1979) and after-care of the animals was also stated. Whole anticoagulated blood and blood samples, for serum, were collected before operation and at the first 24 hrs. P.O. then every 12 hours till time of death where urine samples were collected, necropsy was performed and vital tissues were collected for histopathological examination.

Whole anticoagulated blood samples were used for blood urea nitrogen (B.U.N.) and non-protein nitrogen (B.N. P.N.) as described by Ratiska, (1970). Serum creatinine was estimated by the method of Polin and Wu (1920). Serum sodium and potassium were determined by the use of EEL, flame photometer.

The serum inorganic phosphorus concentration was evaluated by the method of Antonova and Plinova, (1971). Reaction and specific gravity of urine were estimated. Semi-quantitative determination of protein, sugar and ketones in the urine was evaluated (Coles, 1974).

RESULTS

The time of death post-operation was ensured at 132 hrs. for animals No. 1 & 2 and at the 8th day for the third animal and at the 9th day for fourth animal. Results of biochemical studies and the picture of histological sections are demonstrated in tables 1 & 2 and figures 1-6.

DISCUSSION

1. Nitrogenous constituents:

Progressive increase of B.U.N. & B.N.P.N. levels in experimental animals, following urethral obstruction, was evident (Table 1). This was closely related to time elapsed after urethral obstruction. Thus a range of 74.7-106.6 mg% for B.U.N. and 126.6-134.8 mg% for B.N.P.N. recorded. Progressive daily increase of 50-150 mg% of B.U.
URETHRAL OBSTRUCTION IN RAMS

The kidneys revealed gelationous transformation of the perinephric adipose tissue together with the superfi-
cial petechial haemorrhages. Their texture was more softer than normal and on longitudinal cut section, they
showed pale areas in the cortex and dilated pelvis which contained gelationous mass. The urinary bladder of the
four rams was very distended with urine and showed superficial haemorrhagic patches.

The serosa of ureters of the four rams were congested. Opening of the chest cavity showed congested thoracic
muscles. Largex, trachea and bronchi had congested blood vessels and the trachea of the third case was filled
with frothy serous exudate. All the lobes of the lung were rigid, enlarged and uniformly discoloured purplish
red. On cut section, frothy serous exudate coagulated by pressure. Features of oedema and congestion of bronchial and
mediastinal lymph nodes were also present.

The heart was enlarged and had hydropericardium and its muscles were flabby. Opening of its chambers showed
clotted blood in the left ventricle and pulmonary artery. There were petechial haemorrhages subendocardially spec-
ically in the left ventricle.

Micromorphological Changes:

In the kidney some tubules showed necrotic changes of epithelial lining, while others were dilated with
flattened epithelial cells. Scattered ruptured tubules, hyaline casts and occasionally albinous material in
another tubules were also observed. Glomerular changes in the form of widely dilated Bowman's capsules with atro-
phied tufts in some parts (Fig. 1,2,3) and severe congestion in other were found.

The livers showed centrolobular necrosis with well developed fatty change (Fig. 4) thrombosis in the central-
al portal veins and hepatic and lymphocytic infiltration in portal triad were sometimes observed.

The lungs revealed changes related to slight catarrhal bronchitis. Hyperaemia of the capillaries surround-
ing the alveoli was accompanied by occasional neutrophilic infiltration. Small amounts of oedematous fluid with
the presence of some red cells was observed in alveoli (Fig. 5). Areas of collapse surrounded by areas of compensa-
tory emphysema was a common finding (Fig. 6). Destruction of bronchial epithelium with the presence of lympho-
cytes and macrophages were observed in some cases.

In the heart, the muscle fibers were degenerating with small haemorrhages inbetween the bundles.

Patchy necrosis and sloughing of the glandular epithelium in the abomasum were observed. In this region,
there was hemorrhages and numerous inflammatory cells with congested blood vessels. The intestinal mucosa showed
necrotic and shedding in its villar epithelium.

No characteristic changes in the spleen were observed.

Pathological lesions observed in liver, kidney, heart muscles, abomasum and intestine consisted mainly of
degenerative and necrotic changes which can be attributed to the toxic effect of increased urea in the blood
(uraemia) and liberation of ammonia in the gastrointestinal tract. Lesions in the kidney, liver, heart and abomasum
were comparable to the lesions that have been reported by other investigators in cases of uraemia following renal
failure. Vascularisation of the hepatocytes around central vein was recorded by SMART and FLETCH (1972) in dogs.

Patchy necrosis in renal tubules was recorded by CAPPELL and ANDERSON (1975) in man. While degenerative
changes have been described by ANDERSON and SCOTTI (1968). Dilatation of renal corpuscles and atrophic glomerular
tufts were stated by SMART and FLETCH (1972). Degenerative changes in the outer portion of myocardium have been
described by ANDERSON and SCOTTI (1968). The presence of serofibrinous exudate into the alveolar tissue of the
lungs was described by CAPPELL and ANDERSON (1975) and WALTER and ISRAEL (1961). Pulmonary haemorrhages was rep-
orted by ANDERSON and SCOTTI (1968).

Haemorrhagic alteration and pseudomembranous enterocolitis were observed by CAPPELL and ANDERSON (1972) in
uraemic person. Sloughing of the glandular epithelium was observed by SMART and FLETCH (1972) in dogs.

REFERENCES

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Table 1: Proportion changes of blood and serum with

Experiment Intestinal Operation

Note: (1) All proportion changes of blood and serum within

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TABLE (2)
URINE CHARACTERISTICS OF EXPERIMENTAL RAMS

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Fig. 1: Kidney: glomeruli with very dilated capsule, shrunken tufts, others with ruptured capsule (10 X)

Fig. 2: Kidney: Enlarged glomeruli, shrunken tufts. Tubules are dilated, with flattened epi, and contain casts (40X)
Fig. 3: Kidney: Dilatation of the tubules and the lumina contain albuminous material (40X)

Fig. 4: Liver: Fatty change with congestion of central vein (40X)
Fig. 5: Lung: Oedematous fluid filling alveolar space.

Fig. 6: Lung: Atelectasis and compensatory emphysema.