et al. (1950) found significant but subclinical prolongation of the prothrombin time in cases without toxic symptoms. The present case showed abnormal liver-function tests but no jaundice or bile in the urine. All five cases in which hepatic disorders have been recorded (Cuthbert, 1950; Livingstone and Street, 1950; Scott and McCann, 1950; Hurrell, 1950) have also had evidence of allergy—eosinophilia, urticaria, or positive skin reaction. No jaundice is reported when normal doses are given following desensitization. It would appear that the jaundice is probably due to a toxic hepatitis of allergic origin.

The occurrence of simultaneous sensitization to streptomycin and P.A.S. may be purely coincidental. In view of the fact that many workers have successfully continued streptomycin therapy in spite of P.A.S. reactions, this would appear to be so. The present case illustrates the confusion that can arise when using both drugs, and the similarity of the drug rashes and fever found. The temperature does not necessarily drop immediately after the cessation of the drug in P.A.S. sensitization, but it is clearly as well to stop both drugs at the onset of pyrexia and rashes.

I am indebted to the Medical Director-General of the Royal Navy for permission to publish this case.

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REFERENCES

- Cayley, F. E. de W. (1950). *Lancet*, 1, 447.
Climie, H. (1950). *Ibid.*, 2, 308.
Cuthbert, J. C. (1950). *Ibid.*, 2, 209.
Hemming, M., and Stewart, C. J. (1949). *Ibid.*, 2, 174.
Hurrell, G. (1950). *British Medical Journal*, 2, 729.
Kierland, R. R., and Carr, D. T. (1949). *Proc. Mayo Clin.*, 24, 539.
Livingstone, R., and Street, E. W. (1950). *Lancet*, 2, 308.
Madigan, D. G., *et al.* (1950). *Ibid.*, 1, 239.
Pulaski, E. J., and De Bakey, M. E. (1946). *Surgery*, 20, 749.
Scott, A. B. A., and McCann, J. J. (1950). *Lancet*, 2, 366.

Effects of A.C.T.H. on Hunner's Ulcer of the Urinary Bladder

Hunner's ulcer (chronic interstitial cystitis, or elusive ulcer) is an uncommon condition occurring almost exclusively in women, generally of middle age. The symptoms, which resemble those of urinary tuberculosis, are severe suprapubic or urethral pain, frequency of micturition, and occasional haematuria. There is a great diminution in bladder capacity, and attempts at distension cause severe pain. On cystoscopy one or more reddish areas or ill-defined "ulcers" may be seen on the fundus and lateral walls of the bladder. The lesion may appear as a whitish area with surrounding vascularity. Occasionally the ulcer presents as a linear crack with capillary bleeding when the bladder is distended. Elsewhere the bladder mucosa has a normal appearance. The urine generally contains a few leucocytes and red blood cells, and is sterile on culture. Microscopical examination of the affected bladder shows areas of vascular engorgement, round-cell infiltration, and fibrosis of the submucosa, extending to the muscular coats and perivesical tissues. When the process extends towards the mucosa ulceration may result. The ureters are affected occasionally, and stricture may occur.

Several theories have been advanced to explain the nature of the condition, but the cause is unknown. Treatment is unsatisfactory; this is doubtless related to the uncertain aetiology and chronic nature of the complaint, which is of insidious onset and generally progressive. Intravenous nearsphenamine, bladder lavage with various medicaments, over-distension under anaesthesia, fulguration, and partial cystectomy have not produced any lasting benefit. Severe intractable cases occasionally warrant transplantation of the ureters into the bowel.

Diagnosis is established on routine urological investigation, and, when urinary tuberculosis has been excluded, is based on the following criteria: (1) severe suprapubic pain and frequency of micturition in women; (2) marked limita-

tion of bladder capacity with severe pain on distension; (3) a sterile urine; and (4) the characteristic cystoscopic appearance.

TREATMENT

On the assumption that Hunner's ulcer may have some aetiological relationship to adrenocortical activity, it was decided to treat with A.C.T.H. patients in whom a diagnosis of this complaint had been established. Five cases were treated, and the following procedure was adopted. During the first week in hospital routine investigation was carried out, including blood and urine analysis, cystoscopy, and measurements of bladder capacity. Biopsy was not performed, as it was thought that this might complicate interpretation of the cystoscopic appearance. For the next three weeks A.C.T.H., 50 mg. daily, was given in equal doses every six hours. Cystoscopy and estimation of bladder capacity were repeated at the end of the course of treatment and at varying periods after the patient's discharge from hospital. Throughout, note was made of the frequency of micturition and any variation in pain.

The immediate results of treatment are given in the Table. These may be summarized as follows: (1) A.C.T.H. had no lasting effect on bladder pain. Three cases were relieved

Effects of A.C.T.H. on Hunner's Ulcer

Case	Age and Sex	Duration of Symptoms	Effect on Pain	Frequency of Micturition		Capacity of Bladder	
				Before	After	Before	After
1	F 73	7 yrs.	No effect	{ Day 12-20 Night 8-9 }	{ Day 12-20 Night 8-9 }	oz. ml. 3 85	oz. ml. 3 85
2	F 60	1½ "	Relieved	{ Day 12-16 Night 6 }	{ Day 4-8 Night 2-3 }	7 200	5 142
3	F 49	2 "	"	{ Day 12-16 Night 3-4 }	{ Day 6-12 Night 3-4 }	6 170	7 200
4	F 74	6 "	No effect	{ Day 12-16 Night 10-18 }	{ Day 6-8 Night 6 }	4 114	11 312
5	F 68	2 "	Relieved	{ Day 12-20 Night 8-10 }	{ Day 8-10 Night 5-6 }	4 114	6 170

Cystoscopy showed no change of appearance in any of the cases.

during the course of injections, but the pain recurred subsequently. (2) Frequency in micturition was slightly diminished in four cases. (3) Bladder capacity was increased in three cases. It was unaffected in one and diminished in another. (4) The cystoscopic appearance of the lesion showed no appreciable change.

COMMENT

In this series of five cases there was no marked response of Hunner's ulcer to A.C.T.H. therapy. Some patients showed slightly symptomatic improvement during treatment but relapsed subsequently. This is in accordance with the results published by Weaver and Tyler (1951). It is possible that with a larger number of cases and increased dosage for a longer period better results may obtain. No untoward reactions were observed during treatment. We believe that the alleviation of pain during treatment with A.C.T.H. is due to the well-known pain-relieving properties of this drug. The continued severity of symptoms in one patient necessitated transplantation of the ureters into the bowel.

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BIBLIOGRAPHY

- Fister, G. M. (1938). *J. Urol.*, 40, 37.
Hunner, G. L. (1914). *Trans. 5th. surg. gynec. Ass.*, 27, 247.
Macalpine, J. B. (1949). *Cystoscopy and Urography*. Wright, Bristol.
Weaver, R. G., and Tyler, F. H. (1951). *Proceedings of the Second Clinical A.C.T.H. Conference*, 2, 507.