'Malignant' macroscopic appearance of an inflammatory testicular lesion— a reminder for surgeons

A. STERNBERG†
M.D.

C. MOR**
M.D.

C. SERVADIO*
M.D.

R. REISS†
M.D.

*Departments of †Surgery 'B', *Urology and **Pathology, Beilinson Medical Center, Petah Tikva, and the Tel Aviv University Sackler School of Medicine, Israel*

Summary

Inflammatory changes in the tunica vaginalis testis may assume a misleading appearance which is highly suggestive of malignancy. Obviously, histological examination is crucial for establishing the correct diagnosis. This phenomenon has been described in texts dealing specifically with testicular pathology, but is not emphasized in standard text books of urology, surgery or pathology. An illustrative case serves as the basis for discussing this entity, for the purpose of familiarizing it to surgeons, urologists and pathologists who are yet unaware of it.

Introduction

Proliferation of mesothelium and granulation tissue of the tunica vaginalis testis may be found in cases of hydrocele secondary to trauma. Macroscopically this tissue may be highly suggestive of malignancy, and the correct diagnosis is then made only by histological examination.

General surgeons and urologists should be familiar with this phenomenon in order to prevent uncalled-for radical resections.

Case report

A 29-year-old man, who had previously been well except for resection of a deviated nasal septum, was referred to the surgical service because of a large hydrocele which had developed after blunt trauma to the right testicle 10 days earlier. Several hundred millilitres of clear, yellowish fluid had been evacuated 2 days earlier by needle aspiration, but the hydrocele had regained its original proportions and was causing considerable discomfort.

Upon admission, physical examination was negative except for the hydrocele in the right

scrotum, which was approximately 15 cm in diameter, slightly tender, and positively transilluminated.

Laboratory tests: Hb 14 g/dl; leucocytes $7.4 \times 10^9/l$, with a normal differential count; thrombocytes $170 \times 10^9/l$; BUN 1.5 mmol/l; glucose 5.3 mmol/l; liver function tests and serum electrolytes were within normal range. Urinalysis revealed microscopic haematuria and many leucocytes per high power field. The chest X-ray was normal.

Surgery was decided upon because of the pain and discomfort this large hydrocele was causing. Under general anaesthesia 400 ml of clear, yellowish fluid were evacuated, and the hydrocele cut open. Numerous patches of red, meaty tissue, 1–5 mm in diameter and 1–2 mm raised above the surrounding tissue were found covering most of the surface of the testis and the greater part of the inner face of the hydrocele sac.

At this stage of the operation, a senior urologist and a senior pathologist were called for consultation, and a sample of the hydrocele fluid was sent for cytological examination. Both consultants agreed that the macroscopic appearance of the finding was highly suggestive of malignancy. Biopsies were taken, but frozen section histology could not clearly differentiate between neoplastic tissue and benign mesothelial reactive proliferation. Cytologic examination of the fluid revealed erythrocytes, a few polymorphonuclear leucocytes and histiocytes, but no neoplastic cells. Therefore, the hydrocele sac was excised and sent for histological examination, and the testicle was returned to the scrotum.

Histological examination after proper fixation and embedding revealed the tunica vaginalis thickened by cellular connective tissue, and granulation tissue with fibrinous deposits. All tissues were infiltrated by lymphocytes and histiocytes, and

Request for reprints: Prof. A. Sternberg, Department of Surgery 'B', Beilinson Medical Center, Petah Tikva, Israel.

foreign-body giant cells were found surrounding cholesterol crystals. The testicular tissue was normal. No neoplastic cells were identified (Figs 1 and 2).

The patient had an uneventful recovery and is perfectly well 18 months after surgery.

FIG. 1. Histological section of tunica vaginalis with lymphocytic infiltration and proliferation of cellular connective tissue (HE, $\times 400$).

FIG. 2. An area indicating old haemorrhage, with foreign-body giant cell reaction surrounding crystals of cholesterol. Note gross thickening of the tunica vaginalis (HE, $\times 100$).

Discussion

The fact that blunt trauma to the testicle may result in the development of a hydrocele is well known. The debate regarding the exact mechanism of this phenomenon is as yet still unsettled in so far as over-production *versus* under-resorption of the clear hydrocele fluid are concerned. Histological examination usually reveals normal tissue structure of the sac, including a normal mesothelial layer.

On the other hand, in cases of chronically infected hydroceles, one finds a sac which is grossly thickened by fibrous-collagenous or granulation tissue, and the mesothelium may be either markedly proliferating or totally absent (Herbut, 1952; Pugh, 1976).

A mesothelial reaction consisting of patches of red granulation tissue has been observed in traumatic hydroceles even in the absence of secondary infection. Analogous reactions are found in other mesothelial lined cavities, such as the pleura, peritoneum and pericardium (Morgan, 1964; Pugh, 1976). In other words, the pattern of response of the 'activated' or 'stimulated' mesothelium consists of (a) cell proliferation which produces patchy red granulations, and (b) accumulation of clear, yellowish hydrocele fluid. Various stimuli can provoke this reaction; we know that trauma and infection do so, although the exact mechanisms by which they act are as yet unknown. Aspiration of the hydrocele fluid most probably activates the mesothelial response by lowering the hydrostatic pressure within the sac, and in doing so upsets the state of equilibrium and starts a renewed accumulation of fluid.

This concept explains why macroscopic and histological examination of the uncomplicated hydrocele of long-standing reveals a normal tunica vaginalis and mesothelium, whereas hydrocele sacs which are actively expanding or chronically infected are characterized by patchy red granulation tissue and proliferating mesothelium, which proceed to form a thick fibrotic tunica vaginalis, often denuded of its mesothelial lining.

Morgan (1964) and Pugh (1976) point out that the inexperienced surgeon or pathologist is misled by the 'malignant' macroscopic appearance of the granulation tissue, and mistakes it for neoplasm. The correct diagnosis of this benign inflammatory condition is easily made by the microscopic characteristics of the tissue, except for those few cases in which atypical features make the differentiation difficult (especially in frozen section preparations). We tend to take for granted the availability of diagnostic histopathological facilities, similar to those with which we are acquainted in the modern hospitals in which we work, although it is quite possible that in various places surgeons still work under less privileged conditions. Therefore, it is almost inconceivable to us that even if frozen section histology may not be available, or may not give a definite diagnosis, a surgeon may decide not to delay a definitive operation for what he considers to be a malignant growth, but to proceed with a radical resection, based solely upon macroscopic impression. Such a decision would of course be a grave error, and would certainly cause considerable distress.

Extensive inquiries among their fellow surgeons

and pathologists gave the authors the impression that this entity is practically unknown although it has been accurately described in the literature. Perhaps the explanation for this lies in the fact that they were able to find its description only in highly specific texts dealing with testicular pathology, whereas general text books of pathology, urology and surgery do not mention this phenomenon. Therefore, the purpose of this paper is to serve as a reminder, and to familiarize those who treat hydrocele with

this phenomenon, for the benefit of their patients and themselves.

References

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