

ORCHIALGIA AS A CLINICAL ENTITY

A CASE REPORT WITH SPECIAL COMMENT ON THE NERVE SUPPLY OF THE TESTIS

THEODORE JAMES, *Pinelands, Cape*

This curious case of pain in one testis as the only feature is presented for its intrinsic interest and for any value it may have in confirming the ideas of those who have differed concerning the significance and localization of testicular pain.¹⁻³

CASE REPORT

On 31 August 1959, L., a man in his late thirties, complained of pain in the right iliac fossa and scrotum of a day's duration. The pain was persistent, it had interfered with his sleep the previous night, and had been severe enough to make him seek medical help. His medical history until then had been excellent, there had been no similar episode and no immediate history of trauma, in fact nothing relating to his complaint could be elicited or solicited. He was a happily married man and the father of three healthy children. He occupied a rather responsible business position in which he was proficient and which gave him no cause for concern or anxiety.

On examination the only positive feature was a point of acute tenderness localized to the lower pole of the right testis. The gentlest pressure here, a mere touch, was enough to make him wince with pain; otherwise the anatomical details of the genitalia (testes and epididymides, vasa deferentia, penis and scrotum) were wholly normal by clinical evaluation. About the internal inguinal ring, deep but gentle pressure was able to elicit pain on the right side only, but nothing else abnormal was discovered in the pelvis or abdomen. Rectal examination was also negative. Nevertheless the pain was bad enough to justify the use of pethidine as an analgesic.

On the following day marked improvement appeared and the patient needed no anodynes; the improvement continued for one week, until 8 September, when there was a recurrence of the initial clinical state—a painful testis with pencil-point tenderness at the lower pole and nothing else to show for it.

On 9 September Mr. Arthur Mears, a surgeon-colleague, saw the patient with me and could not add anything to the clinical picture. Twice-daily temperature recordings were normal. Urine analyses were normal. Empirical treatment with analgesics and tetracycline antibiotics was thought advisable. The next day there was no alleviation in the fierceness of the testicular pain, but during the following 2 days the pain on deep pressure over the right internal inguinal ring disappeared; the patient felt better, but testicular pain remained, and the precisely localized tenderness at the lower pole of the testis had not shifted or abated.

On 14 September the patient, although he was feeling better, had become constive and the pain and tenderness in the testis had not altered although that in the region of the internal inguinal ring had not returned. A friend of the patient had by now suggested the possibility of a malignancy to him! Treatment was limited to a suspensory bandage and anodynes.

On 16 September the patient returned to business after his obstipation had been corrected. By 24 September he was symptomless and agreed to submit to some radiographic studies of his large bowel and renal tracts to ensure, if possible, that no intra-abdominal cause for his pain had been overlooked. These studies showed nothing abnormal, and from that day to this, more than three years have passed without the slightest recurrence of the orchialgia, which had persisted for 26 days and still remains unaccounted for.

COMMENT

This case of pain and tenderness of severe degree located in the scrotum, together with minimal pain and deep tenderness in the region of the internal inguinal ring on

the same side, which could not be explained, raises speculation once again about the nerve supply to the testis.

Here it is as well to mention the supposed innervation of the testis and the tunica vaginalis, which is still subject to argument and discussion. Brown¹ spoke of true testicular pain and 'tunica vaginalis pain', the testicular pain being localized to the lower abdomen or iliac fossa, and the tunica vaginalis pain to the scrotum. In this case the patient located his severe pain in the scrotum—it was to that part that he pointed without touching for fear of aggravating the pain—and this exquisite tenderness limited to a very small region at the lower pole and tail of the epididymis should be, by Brown's argument, 'tunica vaginalis pain'; yet the patient also complained of pain in the region of the internal inguinal ring on the same side, i.e. Brown's true testicular pain.

If the clinical observations were exact and the theory and available anatomical evidence, correct, then this case is one in which both testis and tunica vaginalis were involved by some painful stimulus affecting both, without any clinical evidence to account for the painful stimulus, which was self-limiting.

Brown¹ said that true testicular pain 'is no more located in the scrotum than appendix pain is located in the right iliac fossa', testicular pain being carried by the autonomic nerves, and tunica vaginalis pain, felt in the scrotum, by the genito-femoral nerve. The experimental injection of saline into the body of the testis produces pain in the lower abdomen about the level of the internal inguinal ring. In this patient the pain located at this site suggested that the primary painful focus was in the body of the testis. Although Brown did not believe that true renal pain is ever projected to the peripheral endings of the genito-femoral nerve, it was thought, nevertheless, that X-ray studies should be done to exclude the remote possibility of renal involvement. Since the studies covered the whole renal tract and were normal, this ruled out the possibility of a ureteral cause as allowed for by Brown.

It has been said that two kinds of pain may arise from injury to the testis—a local pain from slight trauma, and a pain in the loin from more severe trauma. Anatomists agree that the nerve supply to the testis comes from the autonomic nervous system and, probably, through one or more of the three lower thoracic segments of the cord. The tunica vaginalis and the scrotal skin have a somatic innervation, the tunica vaginalis being supplied by the genital branch of the genito-femoral nerve (L1 and L2) and the scrotal skin mainly by the pudendal nerve (S2-S4).

Both the parietal and visceral layers of the tunica vaginalis, at experimental enquiry, have been shown to be sensitive, and local pain is readily localized. The genital branch is, however, minute and accompanies the vas deferens and spermatic nerve, entering the inguinal canal at the internal ring to supply the tunica vaginalis. Could

the patient's relatively slight pain, felt in the region of the internal ring, have been a referred pain from the testis suggesting that the genito-femoral nerve has a minute nerve supply to the region of the internal inguinal ring? The genito-femoral nerve has a relatively large cross-section and a low pain threshold, and is stimulated by weak excitation; greater stimulation is needed to evoke pain in testicular tissue innervated by an autonomic nerve of small calibre and high threshold.

Weale,² however, believed there is no reason to think that the pain fibres in the substance of the testis are segmentally far removed from those of its coverings, or even from those of the scrotum. He asserts they are all from L1 and L2, and he is content 'for all practical purposes to ascribe the vagaries of testicular pain to its association with the first and second lumbar segments'. Does the inguinal branch of the ilio-inguinal nerve produce sensation in the testis? MacDougall³ denied Weale's assertion of L1 and L2 supply to the testis, its coverings and the scrotum, but Weale refused to accept that testicular pain can be localized to a single invariable spot, whether its path be along visceral or somatic nerves or both.

So, one side of the argument appears to be that a pain stimulus in the testis (body) produces pain which is not felt inside the scrotum (Brown). This is contradicted by the declaration that such a stimulus can produce pain felt in the scrotum or outside the scrotum (Weale). Nobody has stated that a pain stimulus in the testis produces pain felt in the scrotum *only*. The case presented here appears to indicate that a painful focus in the body of the testis (of unknown cause) is able to provoke pain both in the scrotum (particularly the testis) *and* outside the scrotum in the region of the internal inguinal ring, but of considerably different degree. The implication here

is that if the pain stimulus in the testis is of *relatively low* or moderate degree, it is transmitted along a nerve of large cross-section and is felt outside the scrotum in the distribution of the nerve; and that if the pain is of *relatively high* degree it will be transferred along a nerve of large cross-section and *also* along a nerve of small cross-section and this pain will be felt inside and outside the scrotum, although the greater pain may obscure the lesser.

The question arises: was the acute overwhelming pain in the scrotum tunica vaginalis pain, and that at the internal inguinal ring true testicular pain? If this were so, then the pain stimulus affected both tissues—testis and tunica. Or: was the pain stimulus in testicular tissue only and of such a degree that the pain was felt through the somatic nerve at the internal inguinal ring and by the autonomic nerve in the testis. Is it not fair to postulate then, that the testis is served by two sets of pain fibres, those from the autonomic system, of small calibre and high threshold, and those from the somatic system, of large calibre and low threshold, the first localizing the testicular pain *in the scrotum*, the second localizing the testicular pain *outside the scrotum*? Is low-threshold testicular pain felt outside the scrotum, but high-threshold testicular pain, like tunica vaginalis pain, felt also in the scrotum?

SUMMARY

A case report is presented. The only complaint was one of severe pain located in the testis and some pain in the region of the internal inguinal ring. No cause for this curious pain was found. A short commentary on the argument relating to the nerve supply of the testis is submitted.

REFERENCES

1. Brown, F. R. (1949): *Lancet*, **1**, 994.
2. Weale, F. E. (1949): *Ibid.*, **2**, 36.
3. MacDougall, J. D. B. (1949): *Ibid.*, **2**, 260.