CYSTS OF THE EPIDIDYMISS.

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Cysts in connection with the epididymis are of interest because they are by no means infrequent and, although as a rule they are not in themselves of serious import, their presence may be the cause of considerable anxiety to the patient. It is of importance, therefore, that both the general practitioner and the surgeon should be familiar with the condition.

These cysts are most usually met with in subjects of middle age, and they may be situated anywhere in the organ. They are most commonly found, however, in the region of the globus major, or caput; and as a rule they contain a characteristic turbid watery fluid resembling cocoanut milk. They are occasionally bilateral. When first brought to the notice of the surgeon their average size is about that of a playing marble: occasionally, however, their dimensions are sufficient to mask the testicle. It is not always clear what structures are involved. The pedunculated hydatid of Morgagni might become enlarged to form a palpable cyst; but the appearances usually suggest rather an involvement of the substance of the globus. The enlargement is usually directed forwards and upwards. In marked cases (Fig. 4) the enlargement of the cyst may displace the testicle downwards away from the cord.

Pathology.

The essential fact is that we have to do with a cyst, simple or multilocular, lined by epithelium and containing fluid in which spermatozoa are present. The cyst is in close relationship with the epididymis, and the cyst-cavity is plainly in communication, or in continuity with the seminal ducts. It seems likely that the cyst has arisen by dilatation or distension subsequent to narrowing or stenosis of the epididymal tubules, or the vasa efferentia, or the vasa aberrantia. The cause of the obstruction is not certain; but, except in the cases of congenital origin (e.g., in vasa aberrantia), it is natural to think that involution changes may have led to pericanalicular fibrosis.

With this possibility in mind, I asked Dr. J. F. Heggie of the Pathology Department to examine normal testicles from middle-aged cadavera. He very kindly did so, and examined a series, representing age-groups from the 3rd to the 8th decade. In addition, sections were examined from 2 cases of undescended testes in adults.

Dr. Heggie reported as follows:—

“The testes from 9 cadavera were cut longitudinally in the coronal plane, to include the rete, the globus major and minor, and the vasa aberrantia; and in some cases horizontal sections were made from the other testis. Attention was paid to possible changes in fibrous and elastic tissues.

“There was nowhere any evidence of fibrous tissue increase, or change such as would lead to nipping of the tubules with consequent obstruction and dilatation. None of the organs was diseased, and, unfortunately, in none were any cysts found. Any changes noted were those of advancing age. The main feature was a coarseness and slight increase (? condensation) of the elastic tissue,

with occasional granularity and fragmentation of the fibres. In none of the sections was there any basophilic staining with hæmatoxylin, such as is seen in the elastic fibres of the skin, associated with dehydration or calcium impregnation of the fibres, in certain pathological conditions, e.g., rodent ulcer; and to a lesser extent in the elderly subject. Similarly, there was no marked hyaline change in the white fibrous tissue, and no deposition of calcium salts. Neither was any change made out in the muscular coat of the efferent tubules.

“These findings, for whatsoever they be worth in so small a group of specimens under observation, rather negative the view that epididymal cysts arise as a result of non-inflammatory pericanalicular fibrosis and obstruction.”

There is, however, another way in which obstruction may be caused, viz., *within* the tubules, and resulting from hyperplasia of the lining epithelium (Case IV *infra*).

Whichever be the cause, there results an accumulation of seminal secretion, with, ultimately, distension of the tubules to form a cyst behind the obstruction.

So far, the pathological cause of epididymal cysts remains a subject for speculation. It may, however, be remarked that the case of a cyst originating in the dilatation of a vas aberrans is comparable with that of congenital cysts of the kidney. The fact that vasa aberrantia are well-known to anatomists, and are figured in anatomical text-books, without showing any appearance of cystic change, leaves us in the dark as to the immediate causes underlying cyst-production. In Case II (*infra*) the cyst-wall was composed of dense, laminated connective tissue. Whether that tissue preceded or followed the cyst we cannot say. It may be noted that in idiopathic hydrocele of the tunica vaginalis histological examination very often shows fibrosis of the subserous tissue.

Symptomatology.

The condition is usually symptomless, and is accidentally discovered by the patient. Sometimes there is vague discomfort, or even slight pain complained of. There is no marked discomfort locally, unless in rare cases where the cystic formation reaches a large size. As is usual in the case of swellings in the external genitals, once the patient has noticed the condition it may cause him anxiety.

Physical signs. On examination a more or less tense globular swelling can be felt. The cyst is most often situated in the region of the caput; but it may occur anywhere in the epididymis. In Case II it was in the neighbourhood of the globus minor. Sometimes fluctuation can be made out. In some cases the cyst forms a visible swelling. If not, it can be demonstrated by grasping the scrotum from behind and pushing forwards the testicle and epididymis. If the cyst be suitably situated the translucency test is positive, although the glow will probably not be so clear as in the case of ordinary hydrocele of the tunica vaginalis. The defective glow is due partly to the unfavourable situation as well as to the comparatively small size of the swelling, and partly to the nature of the contained fluid (*supra*). It has to be kept in mind that hydrocele of the tunica vaginalis may be present in addition to the epididymal lesion, as in Fig. 2. Should the hydrocele be well marked it may mask the cystic formation in the epididymis. The cyst is not always unilocular. Not infrequently, as in Figs. 1 and 3, it is multilocular, with septa subdividing the cavity. If the subdivision be complete, fluctuation may be difficult or actually impossible to determine.

Diagnosis.

The diagnosis is as a rule easy. The condition runs a chronic course, and is not likely to be confused with acute epididymitis. Chronic epididymitis, tuberculous or gummatous, may cause swelling in the region of the caput; but it is only when breaking-down of the focus has occurred that it is liable to be mistaken for a cyst. In that case there is thickening or condensation of the surrounding superficial tissues which will indicate the true nature of the swelling. On the other hand, a very tense cyst may simulate a solid enlargement, inflammatory or neoplastic, and the correct diagnosis be only determined by exploration. The simplest method of exploration is to aspirate by the hypodermic syringe. Should aspiration fail to draw off fluid the parts should be exposed by incision. In the ordinary cyst palpable condensation (fibrosis) of the epididymis is unusual.

Treatment.

Treatment may be palliative or radical, and ranges from tapping to excision. Tapping is not curative, and requires to be repeated, and it should be employed only if more active measures be contra-indicated. Active treatment consists in tapping followed by injection of iodine; excision of the cyst; epididymectomy, or, in some cases, removal of the testicle (unilateral castration).

1. **Tapping, with injection of iodine**, may be performed by closed or by open method.

(a) *Closed method.* The cyst is made to project by squeezing the testicle forwards so as tightly to stretch the overlying skin. The cyst is then punctured with the hypodermic syringe, and some of the fluid aspirated. The syringe is detached, leaving the needle *in situ*, and a fresh syringe, containing iodine (4% in spirit) is attached to the needle butt and the iodine injected into the cyst cavity.

(b) *Open method.* If for any reason it be desirable, the parts may easily be inspected through a small skin-incision. If the cyst presents in the wound it can be treated as in (a). If it be found that the cyst projects into the tunical cavity the incision is deepened to include the parietal layer of the tunica vaginalis. The disadvantage of a wound, as compared with a needle puncture, is balanced by the opportunity which is given of inspecting the parts and of determining the relationships of the cyst, and whether or not it be multilocular.

Whether (a) or (b) be performed, the after-course of events is similar on a small scale to what occurs in the injection treatment of hydrocele of the tunica vaginalis. The resulting swelling and induration of the epididymis causes little pain or inconvenience, and although the induration may last for several weeks it does not confine the patient to bed for more than one or two days.

2. **Excision of cyst with or without epididymectomy.** This necessitates open operation and should be practised if the cyst recurs after tapping and injection. The operation is usually comparatively easy. Should it be found impracticable to dissect the cyst from the epididymis, or should there be multiple cysts, epididymectomy may be required. In the case of either operation care should be taken to avoid damaging the spermatic vessels, and it should be remembered that their preservation is sometimes by no means an easy matter.

3. **Unilateral removal of testicle and epididymis** may be called for if excision of the cyst be impossible on account of adhesions to the cord, or if (as in Case V)

the cyst be of large size and adherent to the scrotal tissues. Castration may likewise be called for if epididymectomy be impossible to carry out without damage to the spermatic vessels. In Case V there was a hernia in addition to the large, adherent cyst; and unilateral castration was done in order to permit of closure of the wound after the radical operation on the hernia.

ILLUSTRATIVE CASES.

The following case-notes illustrate some of the features met with in treating epididymal cysts:—

Case I. Excision of Cyst of globus major. R. P., aged 41, 11/2/30. Swelling in right scrotum, of 4 years' duration, appeared 2 years after operation for hydrocele of left tunica vaginalis. Swelling gradually increased in size and not painful so long as scrotal support worn. Sometimes experienced dragging sensation in right groin. Distinctly lobulated swelling found in region of globus major. Degree of hardness differed in the several lobules. Translucency test positive. Exploratory aspiration yielded milky fluid containing spermatozoa. Through large buttonhole incision in tunica testicle was protruded and showed globus major entirely transformed into multilocular cystic formation, larger than body of testis. Cystic mass clipped away with scissors, tunica evaginated and sutured behind testicle, and scrotal wound closed.

Mass showed large anterior and small posterior cysts. After hardening, anterior cyst measured $1\frac{3}{4}$ inch (4.3 cm.) vertically, and 1 inch (2.5 cm.) horizontally: posterior cyst was $1\frac{1}{2}$ inch (3.7 cm.) by $\frac{1}{2}$ inch (1.25 cm.). There was no intercommunication between them. Windows cut in walls showed posterior cyst to be unilocular. Anterior cyst was sub-divided by horizontal septum (Fig. 1) and lower

Fig. 1.—Case I. Cyst, excised from globus major, shows large multilocular cyst anteriorly, and smaller separate cyst, posteriorly. (Nat. size, after hardening).

loculus contained small pea-like cyst. *Histology*—Cyst-wall consisted of delicate, fibro-fatty, rather vascular tissue with flattened serosal cells externally and an internal lining of irregularly rounded cells to which occasional spermatozoa adhered.

Case II. Excision of cyst at lower pole of testicle. A. McD., aged 22, 12/6/28. Swelling in right scrotum, 4 years' duration: painless and caused no inconvenience; little if any variation in size. The swelling, about same size as, and at lower level than testicle, was firm, and slightly tender on pressure. A distinct, cord-like structure attached it to testicle. Swelling apparently cystic: translucency test negative. In view of swelling possibly being an accessory testicle⁽¹⁾ the tunica vaginalis was laid open and found to contain an apparently normal testicle and epididymis. The swelling, which was extratunical, was then exposed from in front by incising the lower pole of overlying tunica, and was found not to be connected with spermatic cord. Aspiration showed cyst with milky fluid contents. Cyst enucleated and tunica closed. From its position, cyst may well have originated in the vas aberrans. *Histology*—Fluid contained very numerous spermatozoa. Cyst-wall was lined by cubical epithelium, and was composed of dense laminated connective tissue with, externally, loose connective tissue containing many small blood-vessels.

Fig. 2.—Case III. Unilateral castration. Specimen, bisected, shows large extratunical cyst which adhered to spermatic cord. Ep., epididymis; T., testis; T.V., parietal tunica vaginalis slightly distended by hydrocele. (Nat. size, after hardening).

Case III. Cyst of globus major, adherent to cord; unilateral castration. J. L., aged 64, 29/1/29, the subject of enlarged prostate, had swelling of left testicle of 3½ years' known duration. Swelling was symptomless, was situated over upper pole of testicle, and was cystic, the fluid containing spermatozoa. Open operation showed cyst of globus major. Upper part of cyst was adherent to cord, and unilateral castration performed. *Pathological examination* revealed no underlying cause for the spermatocele. Cyst lined by cubical epithelium. Specimen, bisected longitudinally (Fig. 2), showed single cyst of considerable size, in substance of globus major. Some degree of hydrocele of tunica vaginalis present. Cyst expanded upwards and forwards away from tunica.

Case IV. Multilocular cyst of globus major; vaginal hydrocele; unilateral castration. R. M., aged 67, 22/9/25. Swelling, right testicle, of 6 months' known duration. Attention drawn to region by slight pain in testicle which was then

found larger than its fellow. Swelling persisted, although pain did not trouble him. On examination, translucent swelling in globus major. Open operation testicle appeared to be cystic, with firm body posterior and medial; possibly multilocular hydrocele; unilateral castration. Dissection after removal showed (Fig. 3), in addition to vaginal hydrocele, multilocular cyst of epididymis. *Histology*—Cyst wall lined by hyperplastic epithelium, and corium infiltrated by round cells; no evidence of tumour-formation.

Fig. 3.—Case IV. Unilateral castration. Extensive multilocular extratunical cyst. Tunical hydrocele. Testicle at first thought to be cystic. Ep., epididymis; T., testis; T.V., tunica vaginalis, trimmed away to show contents. (Nat. size, after hardening).

Case V. Large epididymal cyst displacing testicle downwards into bottom of scrotum; inguinal hernia; unilateral castration. D. J., aged 66, 20/12/32, the subject of right inguinal hernia, had large swelling in right scrotum, of 10 years' known duration. Swelling originally painless; but after a fall, 4 months before admission to hospital, experienced intermittent attacks of pain. Examination showed testicle at bottom of scrotum, and large cystic swelling seated on it. Diagnostic aspiration yielded fluid containing mature, healthy, actively motile spermatozoa. Bassini's operation for hernia; removal of testicle and cyst, to allow of closure of wound.

Measurements after hardening showed testicle 7 cm. in long axis, and cyst 10 cm. in diameter. The interior of cyst (Fig. 4) was exposed by cutting away a large portion of wall on lateral aspect. It showed large vessels coursing over the wall, and incomplete septa and arborescent ridges were seen in its interior. The testicle, exposed by trimming away the tunica vaginalis, lay in horizontal position, forced there by pressure of expanding cyst, which had also separated the vas deferens from the spermatic vessels. The arrangement of parts corresponds with that described by Monod & Terrillon⁽²⁾: *A mesure qu'il s'accroît, il s'étale sur le bord supérieur du testicule, en le masquant plus ou moins; il le force, de plus, à s'incliner de façon à prendre une position presque horizontale.*

Fig. 4.—Case V. Unilateral castration. Large cyst displacing testis downwards. T.T., testis, forced into horizontal position, displayed by trimming away tunica vaginalis, (T.V.). Ridges and incomplete septa, also spermatic vessels, (Sp. V.) seen in interior of cyst-wall. (Nat. size, after hardening).

Conclusions.

1. Epididymal cysts are not rare in middle age, and are commonly situated in globus major.
2. While cysts probably result from obstruction, peri- or intracanalicular, of the lumen of tubules, definite evidence of such was not obtained in any of my cases.
3. Symptoms are rarely clamant, and discovery of cyst is usually accidental.
4. Objective signs are distinct, and any doubt can be cleared up by aspiration of the swelling.
5. Treatment by aspiration and injection of iodine may in the first instance be tried with a good expectation of cure. The more radical treatment by excision of cyst, or, if need be, of epididymis, is frequently required. In exceptional cases *unilateral* castration may be advisable.

I wish here to express my indebtedness to the members of the Pathology Staff, and especially to Dr. J. F. Heggie, for valuable help in histological examinations; also to Miss Brown Kelly for the fine drawings which are here reproduced.

REFERENCES.

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2. Monod & Terrillon, *Maladies du Testicule*, Paris, 1889, p. 543.

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