ON THE

PRESENCE OF SPERMATOOA

IN THE

FLUID OF HYDROCELE,

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IN the early part of last winter I operated in a case of hydrocele, in the fluid of which there were discovered numerous spermatic animalcules. The situation of the fluid was such that there was no reason to doubt the case being "hydrocele of the tunica vaginalis testis." Moreover, the fluid appeared to the unassisted eye to be similar to that which is commonly found in the ordinary form of that disease. There were about fourteen ounces of it.

That it contained spermatozoa was quite accidentally discovered. I had preserved it to be used as a menstruum with which to dilute some blood for the purpose of microscopical observation. I did not examine it till some hours after it had been

abstracted, when it had become quite cold. In this state I put a little of it into a glass, and added to it a small portion of a drop of blood, so that I might see the blood disks separate and quite insulated. It was under these circumstances, while examining the fluid with the microscope, (using an object glass of $\frac{1}{8}$ th of an inch focal length, the magnifying power being from 500 to 600 diameters,) that I observed numerous spermatozoa interspersed among the blood disks. I was at a loss how to account for the presence of the animalcules. I thought at first that the glasses between which I examined the fluid might not have been clean, and might have had some dead spermatozoa adherent to them, as I had been a short time before occupied in investigating the spermatic fluid. But it was quickly proved that the fluid of the hydrocele was the sole source of the animalcules, many of them being discovered in every drop of the fluid which was subsequently examined. They corresponded in size, as well as in form, with the animalcules found in human spermatic fluid, as was demonstrated by measuring them with the micrometer. The fluid of the hydrocele, in the precise condition in which it was abstracted, contained, in addition to the spermatozoa, a few blood globules, small roundish granular bodies, some apparently empty, nearly colourless cysts, and many masses of opaque matter, which seemed to be made up of portions of epithelium.

Since meeting with the preceding case, I have availed myself of every opportunity of examining

with the microscope the fluid taken from hydroceles. I have made the examination in about thirty cases, and in two of them the fluid was ascertained, as in the former case, to contain living spermatozoa.

The next case was met with a few weeks after that which is stated above.

The patient was a widower, *ætatis* 63. He had had hydrocele for many years, and I had previously operated on him 15 or 16 times. The disease was on the left side. The testicle of the other side was perfectly healthy.

On this occasion I drew off sixteen ounces of fluid, of a greenish yellow colour, and so albuminous as to be quite adhesive.

The moment my patient had left me, I examined the fluid with the microscope, using the same magnifying power as in the former case, and at once perceived numerous living spermatozoa swimming about in every direction. A friend of mine who was in the house at the time, and who was familiar with the appearance of spermatozoa, examined them with me; and we continued to watch them for nearly three hours, during which time they were actively moving about. Some died sooner than others, but we left many of them in full play. They seemed to die as the fluid between the glasses on which they were placed, evaporated, those nearest the centre continuing longest in an active state; and as they died, there was visible in them a heaving, an expansive motion, as if in the last extremity they were gasping for breath. It was impossible fairly to com-

pare the motion to anything else. They evidently possessed the power of changing their form ; they would at one time materially elongate, and at another time shorten their bodies. In their vigorous state their movements were very similar to that of a common tadpole.

In the fluid of this case there were likewise a few blood globules, transparent cysts, and small granular bodies ; also portions of epithelium, or what very much resembled it.

The 3rd case occurred in a man, of the age of 65, one of my hospital patients, and in whom the disease had existed for about twelve months. It commenced immediately after the testicle had been violently squeezed by an enraged and drunken man who was fighting with another, and whom my patient was endeavouring to separate.

The situation of the fluid appeared to be very much that of common hydrocele of the tunica vaginalis, and after the operation had been performed there was nothing peculiar to be observed in the testicle or its appendages. There were about four ounces of fluid abstracted, which was of paler colour than is usual in hydrocele, and displayed very much the appearance described by Mr. Liston as exhibited by the fluid of the encysted hydrocele, in which he had discovered spermatozoa. But in one respect it differed from that, as it contained a considerable quantity of albumen. There was also found in it much saline matter ; but the precise nature and proportions of which were not ascertained. The

spermatozoa met with in the fluid were very numerous, and were seen in a living state, not only by myself, but also by Mr. F. Wood, surgeon, of Brownlow Street, and Mr. John Quekett, of the College of Surgeons.

In this, as in the former cases, the fluid contained a few blood globules, transparent cysts, spermatic granules, and scales of epithelium.

This patient has been tapped a second time, and the fluid presented the same appearances as on the first occasion. It was examined, not only by myself, but also by Drs. Burrows and Russell, as well as by Messrs. Lawrence, Stanley, Paget, &c.

At present I am unacquainted with any facts that will satisfactorily account for the circumstances under which the spermatozoa in the preceding cases departed from their natural abode, and acquired a "local habitation" in the situation in which they were discovered; but the probability is, that the cases will be presented to me again, when I shall have an opportunity of further investigating the matter.

It may, however, be as well to state here, that the testicle having been wounded in the operation, would in no way explain the fact, for spermatozoa fully formed, and in an active state, are rarely met with in the human testis, and even in the epididymis or vas deferens there never exist, *at one time*, as far as I have had opportunities of judging, sufficient spermatozoa to yield anything like the vast number that were present in the cases of hydrocele adduced

above. In two cases of abscess communicating with the epididymis, which I have had under my observation lately, one of them a patient of Mr. Lawrence, in St. Bartholomew's Hospital, there have passed off very few spermatozoa. Spermatic granules have come away in great number.