[Acta Urol. Jap. Vol. 25
No. 7, July, 1979]

SPHERICAL BODIES CONSIDERED AS A SECRETION IN THE SEMINAL EPITHELIUM

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INTRODUCTION

Numerous spherical bodies were observed in the seminal vesicle of male SMA mice of 3 months of age. The situation, size, form and external and internal structure were observed and the significance was discussed. The spherical bodies in the seminal vesicle havs been reported as they had not been recognized in the previous reports.

MATERIALS AND METHODS

Specimens of seminal vesicle were obtained from 3 male SMA mice of 3 months of age. The male mice have been bred in the cage separated from female ones. Any anomalies were not recognized in the genital organs of the mice by macroscopic observations. The seminal vesicles were resected from each case, divided longitudinally and then transversely into pieces. Samples of seminal vesicles were rinsed in physiological saline to remove secretion and then fixed in 2.5% glutaraldehyde in 0.1M sodium phosphate buffer. The conductive staining was done in the following method. The seminal vesicle was fixed for 1 hour with 2% osmic acid and rinsed for 1 hour in distilled water containing 2% tannic acid and then stained for 1 hour with 2% osmic acid. They were then dehydrated through a graded series of alcohol and benzene. The specimens were replaced in paradichlorobenzene in 60°C and sublimated. The observations were performed without a metal coating in the scanning electron microscope using accelerations voltage of 15 kV.

On the other hand, specimens of the mouse seminal vesicle were fixed in 10% formalin solution, embedded in paraffin and stained by the hematoxylin-eosin method and the structure of the spherical body and its nature was studied.

RESULTS

The epithelium of the mouse seminal vesicle consists of a layer of cuboidal or low columnar cells. It projects far into the lumen and anastomoses frequently with one another (Fig. 1, 2). As the inner free surface of the seminal vesicle epithelium probably consists of a villi-like structure, the surface is irregular, and it shows a wavy form (Fig. 1). The secretion of the epithelium is seen as a mass by the glutaraldehyde fixation (Fig. 3). In many places of the epithelial cells, especially in the deeper crypt between the folds and in the gland-like structure, observed are numerous spherical bodies (Fig. 4). The spherical bodies are not perfect in form, they frequently show an egg-shaped or a spindle-shaped form under pressure between the folds of the epithelium (Fig. 5). The bodies have various shapes and sizes. They have the length from 1 μ to 300 μ in diameter (Fig. 6, 7). Destroyed marks (Fig. 8) or irregular cavities were seen on the surface of relatively large spherical bodies (Fig. 9). By higher magnifications of the spherical body surface, convex or concave round structures were seen and they showed almost definite size (Fig. 10, 11). Small spherical bodies frequently come in contact with a relatively large spherical one. A small pit was seen on the surface of the

Fig. 1. The seminal vesicle of the mouse (×300).

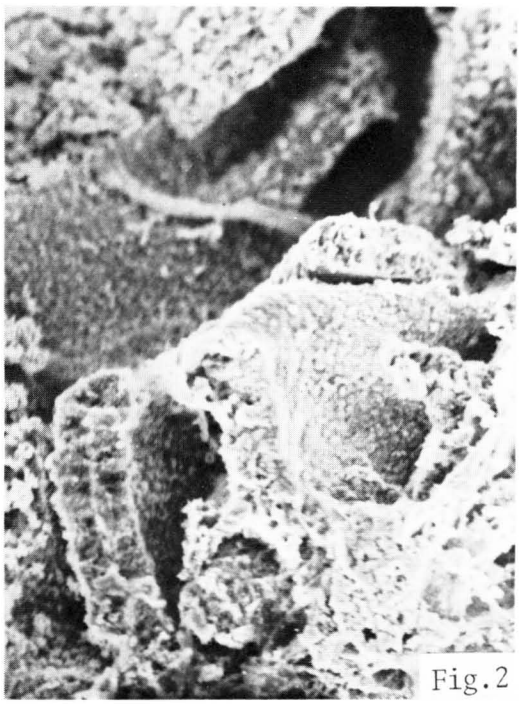

Fig. 2. The epithelium consists of columnar cells (×300).

Fig. 3. The secretion of the epithelium (×1,000).

Fig. 4. Numerous spherical bodies between the folds (×100).

Fig. 5. The bodies have various shapes (×300).

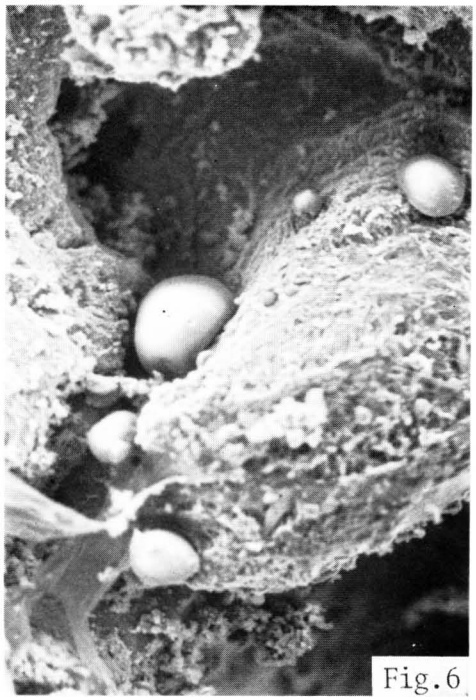

Fig. 6. Various sized bodies (×300).

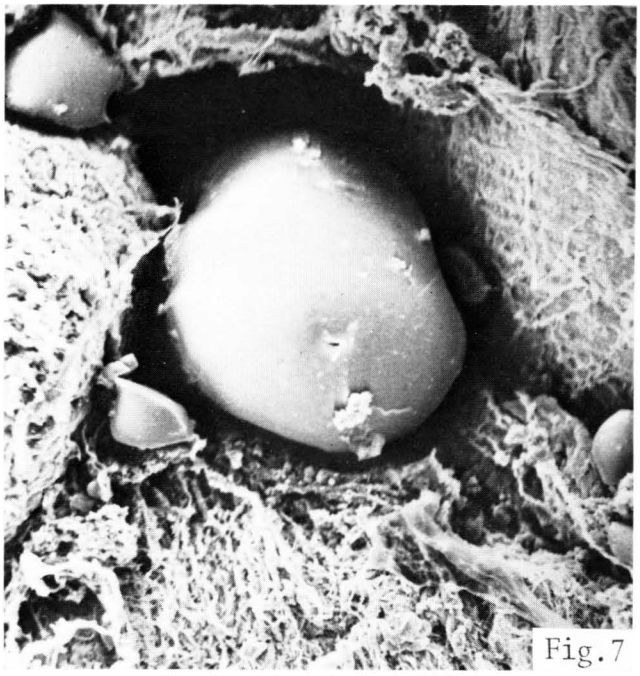

Fig. 7. A large body (×300).

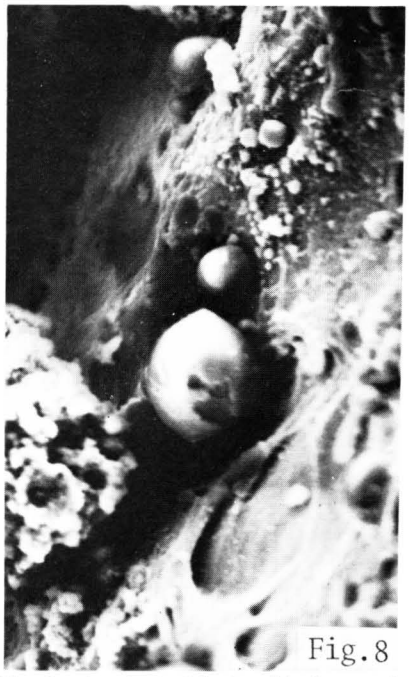

Fig. 8. A spherical body with destroyed marks (×1,000).

Fig. 9. A body with irregular cavities (×1,000).

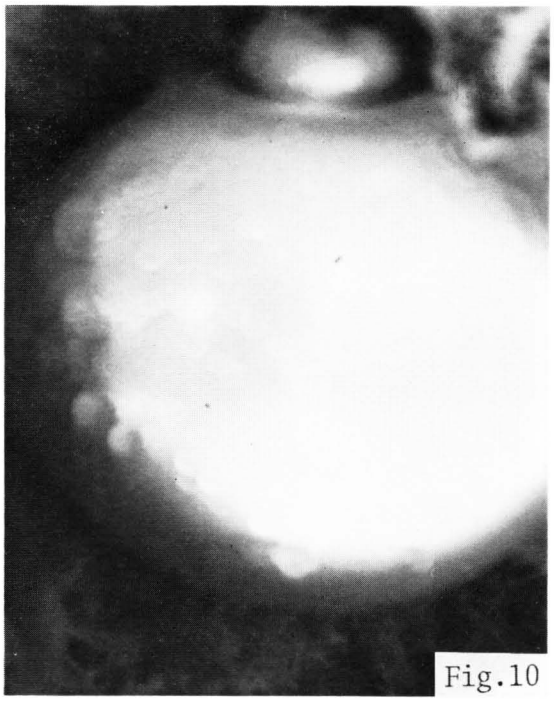

Fig. 10. Convex or concave round structures on the surface of the body (×3,000).

Fig. 11. A small pit on the surface of the large body (×3,000).

Fig. 12. The cut surface of the spherical body (×300).

large body (Fig. 11). Complicated structures like a creature or a cell in the internal structure were not seen on the surface of the spherical body cut with a knife. The cut surface seemed to be amorphous and it is ripped off (Fig. 12). The bodies are not so hard.

DISCUSSION

It has been frequently stated that the lipofuscin granules in the epithelial cells of the human seminal vesicles are residues of resorbed sperms (Lehner, 1924; Mathis, 1943; Watzka, 1944). Hücker and Aumüller (1976) have shown this pigment to be of endogenous origin, a residue of deteriorated cell organelles. Furthermore, there is no evidence of any resorptive capacity in the human seminal vesicle epithelium (Aumuller, 1973 a, b). Some researchers have shown that horseradish peroxidase injected into the lumen of the hamster seminal vesicle can be detected subsequently later (5~20 min) in the Golgi apparatus of the same epithelium (Mata and David-Ferreira, 1973). The differentiation between the granule and the lysosome was discussed by the observation of secretory granules in the seminal vesicle epithelium of the rat (Muto, 1970).

According to our scanning electron microscopic analyses, it is supposed that the secretion substance collects and forms a mass on the surface of the epithelium, especially in the folds of the one. The substance may become a spherical body in a long time. It is considered that the small round marks on the surface of the spherical body were caused by the pressure of the free surface of the epithelium. It is thought that the secretion of the epithelium is almost liquid, for that reason, the internal appearance of the body is amorphous. It has become larger by the deposition of the secretion constituent around the core.

CONCLUSION

Spherical bodies were shown in the seminal vesicle of 3 male SMA mice of 3 months of age. The situation, size, form and internal and external structures of the body were observed and discussed.

1) Numerous spherical bodies locate on the epithelial cells or in the deeper crypt betwen the folds.

2) The body has a diameter from several to over 300 μ.

3) The body shows a spherical, ovoid or spindle form.

4) The surface of the body is smooth, however, small round structures are seen by higher magnification.

5) The cut surface seems to be amorphous. Therefore, it is not considered that the body is a cell or a creature.

6) It is thought that the body consists of the secretion from the epithelium.

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(Accepted for publication, February 26, 1979)

和文抄録

精嚢上皮の分泌物と考えられる球状体

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生後3カ月の SMA 系雄マウスの精嚢内に観察された球状体の存在位置，大きさ，形，表面と内部構造について論じた．1）これらの球状体は上皮細胞の表面とくにその皺の陥凹部にあることが多い．2）大きさは直径数 μ から大きいものでは 300 μ を越えるものまである．3）形は球状，卵形状，紡錘状をなしている．4）表面は一般には平滑であるが，3,000倍の拡大で，円形の圧痕とも凸隆とも思われる構造がみられることがある．5）内部は生物的構造ではなく，無構造に近い．6）これらの球状体は液状に近い上皮細胞の分泌物からなるものと思われる．