

# **Lymphography of the Skin of the Scrotum and of the Penis in a Case of Lymphangioma circumscriptum cysticum**

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## *Introduction*

The skin of the scrotum possesses a surprisingly dense network of subepidermal lymphatics (2) which probably serves the function of thermoregulation of this organ. The lymph drainage of the skin of the penis and of the scrotum flows to the homolateral and also to the contralateral lymphonodi inguinales sup. superficiales, and then continues on to the lymphonodi iliaci externi mediales (3, 4).

Circumscribed lymphangioma is a benign tumor of the skin lymphatics, present at birth or since early childhood at a specific location; its grouping to the skin naevi is under discussion (5).

Histological examination reveals cystically dilated lymph vessels and lymph channels of various sizes in the corium, the larger epidermis-covered cysts bulging tumor-like above the surface of the skin. This clinical picture can be complicated by the great mechanical friability of the cysts, by lymphorrhea, by phlegmonous changes.

## *Material and Methods*

A 13-year-old patient in the University Hospital for Dermatology was diagnosed to have circumscribed cystoid lymphangioma of the scrotum and penis (Fig. 1a and b). The skin of the scrotum and penis showed edematous thickening. Cystic skin-colored tumors of variable size, the largest approaching the size of a cherrystone, were scattered diffusely over the entire scrotum, a denser population being found near the penile root. Similar individual cysts appeared in the region of the prepuce. On incision, a watery clear fluid flowed out of the cyst and ceased only slowly. Histological examination of a biopsy from the scrotal skin showed the characteristic structure of a lymphangioma circumscriptum cysticum. With the patient in a supine position, we injected 2 ml Lipiodol Ultrafluid® into two bulging cysts on the ventral side of the scrotum near the root of the penis. Without applying strong pressure, the duration of the injection was approximately 3 minutes per cyst. Over the same period of time we injected 1 ml of contrast medium into a small cyst on the distal foreskin of the penis. Part of the contrast medium flowed out of the injection site again. The process of injection was painless for the patient, and the cysts did not enlarge noticeably. The penis was fixed to the anterior wall of the abdomen and the testes covered. 10 minutes after injection, two sagittal views were made, and a control x-ray was made 9 weeks later. Further x-rays were not carried out in view of the patient's age.

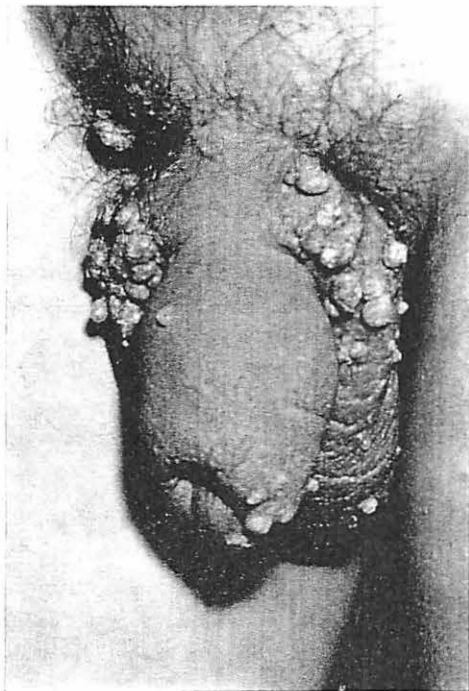


Fig. 1 a



Fig. 1 b

Fig. 1 a, b Typical multiple cystic tumors of the scrotum and penis in a 13-year-old patient with lymphangioma circumscriptum cysticum of the scrotum and of the penis. Mechanical irritation frequently led to the rupture of a blister and the subsequent outflow of watery fluid. There were no oedema of the legs.

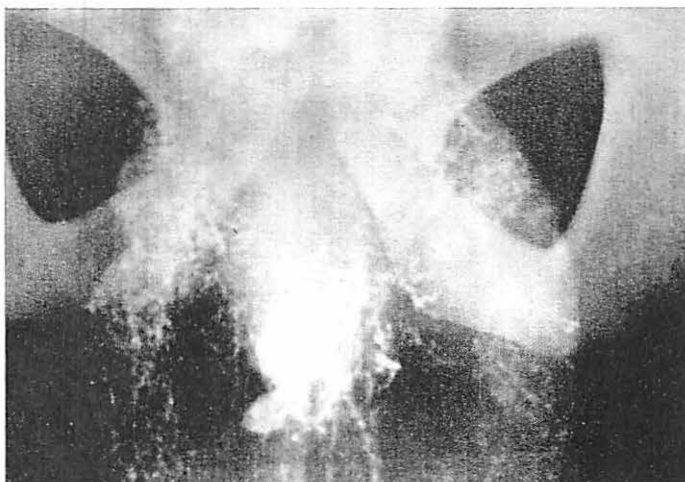


Fig. 2 Lymphographic demonstration of the dense subepidermal lymph plexus.

### Results

The x-ray picture reveals a dense network of lymphatics extending over the entire scrotum and skin of the penis (Fig. 2). There is an oval zone in the middle of the scrotum where the distribution of the lymphatics is sparse. In the centre of this zone, the lymph vessels are again grouped more closely together, show better filling and radiate into the rest of the scrotum, arching into the root of the penis which they form a circle around. Particularly remarkable is the almost regular and symmetrical distribution of the lymphatics (Fig. 3). All sections are tortuous, some arched and showing distinct loop formation in some areas. Long stretches are markedly dilated and there are contrast medium accumulations, in their course, some being as large as stick-pin heads. Lakes of contrast medium, whose size would correspond to those of the cysts seen on the outside, did not appear. The control picture taken 9 weeks later, reveals only a few sparse traces of the contrast medium grouped irregularly in lines and dots around the root of the penis (Fig. 4).

### Discussion

In a case of lymphangioma circumscriptum cysticum of the scrotum and penis, an injection of Lipiodol Ultrafluid® into 2 larger cysts of the scrotum near the root of the penis and into one cyst in the prepuce, revealed a dense network of lymph channels

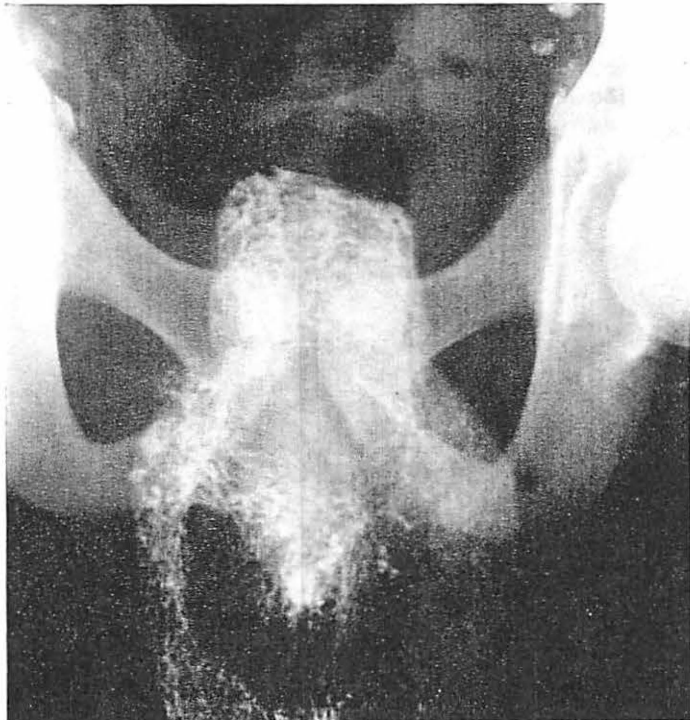


Fig. 3 Remarkably regular and symmetrical distribution. The vessels are dilated, tortuous, showing in their course many accumulations of contrast medium, the size of stick-pin heads.

extending almost perfectly regularly and symmetrically over the scrotum and the skin of the penis. The lymphatics are distributed more densely in the skin of the penis than in the scrotum. An obvious separation of the two systems was not seen; they communicate as one might expect from the fact that they have a common drainage into the inguinal and iliac lymph nodes. The macroscopically visible cysts which are characteristic for this clinical picture and which should appear as large lakes of contrast medium on the lymphogram cannot be seen. This would indicate that the cysts form a sort of sidarm to the lymph plexus with considerable slowing of the flow of lymph. Since the control picture taken 9 weeks later showed only a small remainder of contrast medium, there must be a communication with the rest of the lymphatic system.

Earlier attempts to demonstrate the lymphatic system in this disease are limited to the injection of foreign bodies and dyes suitable for examining only circumscribed areas (6). To our knowledge, a lymphographic demonstration of the normal penis and scrotum skin has not yet been reported. Considering the degree of pathology in this case, the evaluation of this lymphogram is difficult. Histologically the scrotum is remarkable because of the dense network of subepidermal lymph vessels. Since the vessels demon-

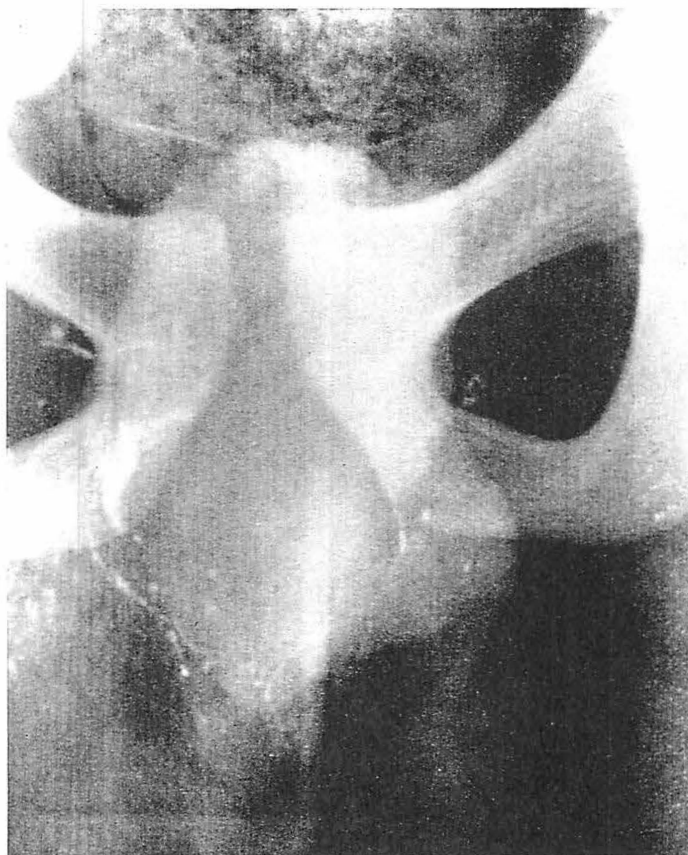


Fig. 4 Control x-ray view taken 9 weeks after the contrast medium injection; only slight contrast medium traces are found in the area of the penile root.

strated in our lymphogram are surprisingly regular and symmetrical the stick-pin-sized, multiple lakes of contrast medium in the course of the tortuous vessels, the loop formation and the dilatation of some vessel sections indicate the pathological changes in the lymphatic system here.

Bilateral lymphography of the back of the foot revealed normal lymphatic drainage without a block so that a retroperitoneal dysplasia of the lymph vessels can be excluded. Therefore this case presents a circumscribed isolated congenital malformation of the lymph vessels of the scrotum and of the skin of the penis.

### Summary

The lymphographic demonstration of the subepidermal lymph plexus of the skin of the scrotum and of the penis was successfully performed in a case of lymphangioma circumscriptum cysticum. The problems arising in the evaluation of this picture, as well as the degree of pathology are discussed.

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## Lymphangiographic Appearances in the Rat

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Standard texts on the anatomy of the rat deal very perfunctorily with the appearances of the lymphatic system (1, 2) and no description of the normal radiological findings could be located in the literature. In a previous communication (3) the method of performing this examination in rats was described. The present paper is based upon the results of 24 lymphangiographies and is presented as there are certain fundamental differences from those occurring in humans. Any investigator using this technique must therefore be aware of these aspects.