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Venography of the Left Renal and Left Gonadal Veins as a Supplement to Lymphography. Report of Four Cases

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Summary

The interpretation of lymphographic findings in the left lumbar region is occasionally equivocal. Venography of the left renal and the left gonadal vein may constitute a valuable supplement to lymphography.

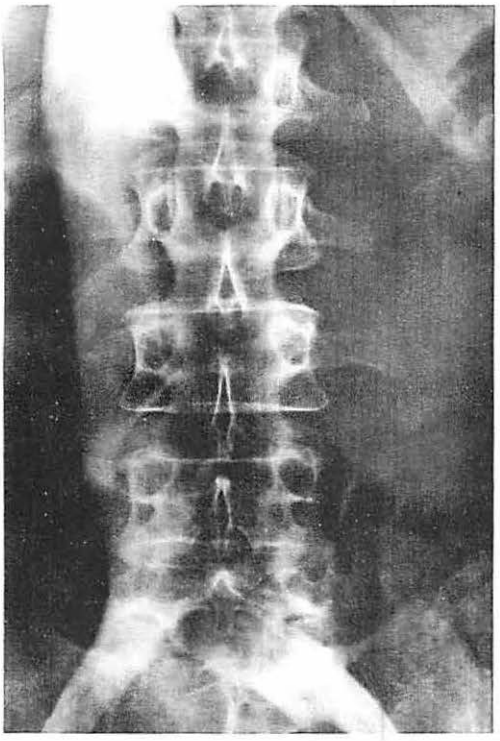
The role of lymphography in the search for primary or secondary malignant growth in the retroperitoneal lymph nodes seems widely accepted, even though the accuracy has certain limitations (4, 8). In order to reduce these limitations a number of supplementary examinations have been introduced such as tomography, stereo- and subtraction technique, urography, arteriography, pneumoretroperitoneum and venography of the pelvic veins and the inferior vena cava (12, 13).

Lee et al. (11), for example, claimed that venography of the pelvic veins performed with abdominal compression was more accurate than lymphography in the diagnosis of metastases from carcinoma of the uterine cervix stage 1.

The lymph nodes of the upper right lumbar region are often insufficiently demonstrated lymphographically (6). Venography of the inferior vena cava has proved to be a valuable supplement to cover this region (5, 7). The subsequent urograms may give additional information about the extent of large tumor masses. The nodes of the upper left lumbar region are as a rule better demonstrated by lymphography than the contralateral ones. At the level of the second lumbar vertebra, a distinct group of nodes, "the left upper lumbar clump" (9), may normally appear. This group may extend further laterally than the more distal left lumbar nodes, and sometimes cause differential diagnostic problems. Thus, at our institution, a supplementary examination of the left lumbar region similar to vena cavography on the right side, was felt to be needed. For this reason, our routine vena cavography was expanded by including venography of the left renal vein and left gonadal vein.

Method

The femoral veins were punctured under local anesthesia and short polyethylene catheters introduced by the *Seldinger* technique. Two contrast medium injections each of 40 ml Urografin 60% with flow rate 12 ml/sec were made and films exposed of the iliac veins and the inferior vena cava in anteroposterior and lateral projections. Subsequently the catheter in the right femoral vein was replaced by a preformed red Becton-Dickinson catheter with side-holes, the tip of which was led into the left renal vein under monitor screen control. With the tip near the medial border of the left kidney 25 ml Urografin 60% was injected with flow rate 8 ml/sec. A series of films were exposed of the left renal vein. These films often revealed the point of entry of the left gonadal vein. The catheter was then slowly withdrawn until the preformed tip with a downward bend entered the gonadal vein. Care was taken not to introduce the catheter forcibly or too far downward, to avoid iatrogenic dislocation of the gonadal vein. After a test injection under monitor screening, 8 ml Urografin 60% was injected with flow rate 5 ml/sec, and a series of films exposed in anteroposterior projection. When considered necessary, repeated injections were made and films exposed in lateral or oblique projections.



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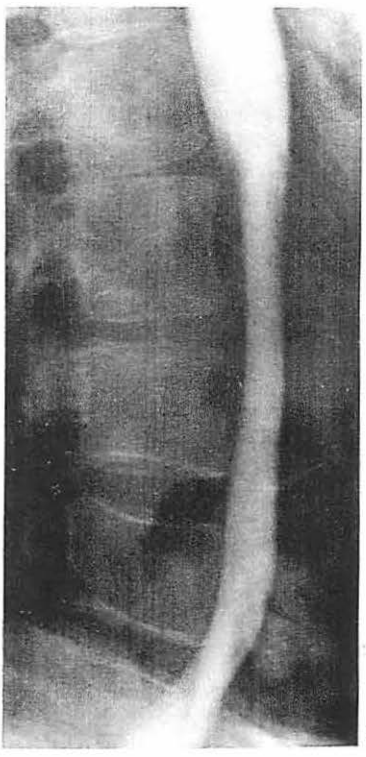

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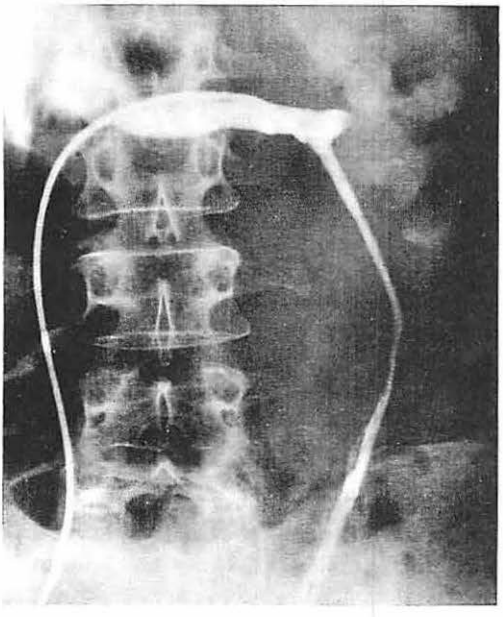
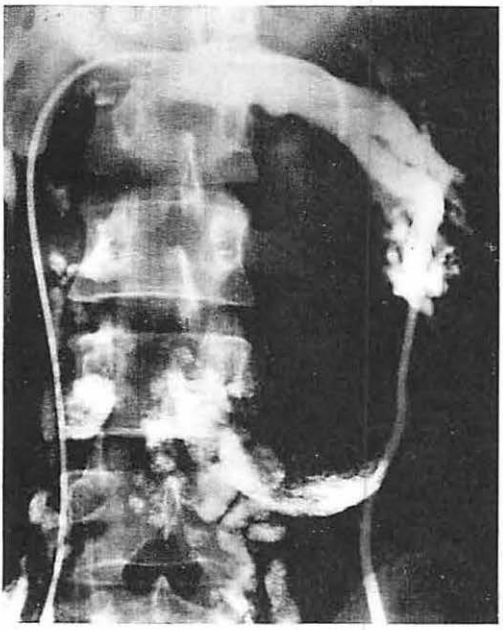


c) Left renal and left ovarian veins. Slight elevation of the former, and marked displacement of the latter. This examination yields further information with regard to the extent of the retroperitoneal mass.

Fig. 1 Venography of the inferior vena cava, the left renal and the left ovarian vein in a patient with malignant lymphoma of the retroperitoneal space.
a) A.p. projection of the inferior vena cava which is slightly narrowed and displaced towards the right side.
b) Lateral projection.

Patient Histories

Patient No. 1. Fifty-six year old female with a short history of abdominal pain and diarrhea. On admission she had no palpable abdominal tumor. The renal function was impaired, and urography showed bilateral hydronephrosis due to ureteric obstruction. Because of the general condition of the patient and a history of drug allergy, lymphography was not found advisable. A venography of the inferior vena cava was performed under supervision from the department of anesthesia. The radiographs revealed a narrowing of the vena cava which was slightly dislocated towards the right side (Figs. 1a and b). A supplementary examination of the left renal and ovarian veins (Fig. 1c) yielded better information about the extent of a retroperitoneal expansive process, which



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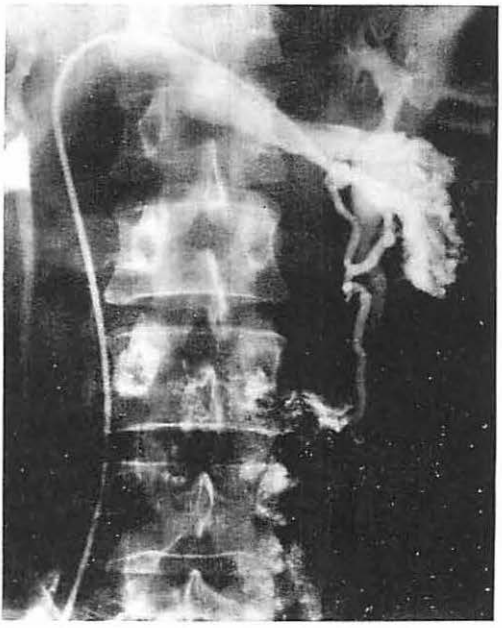

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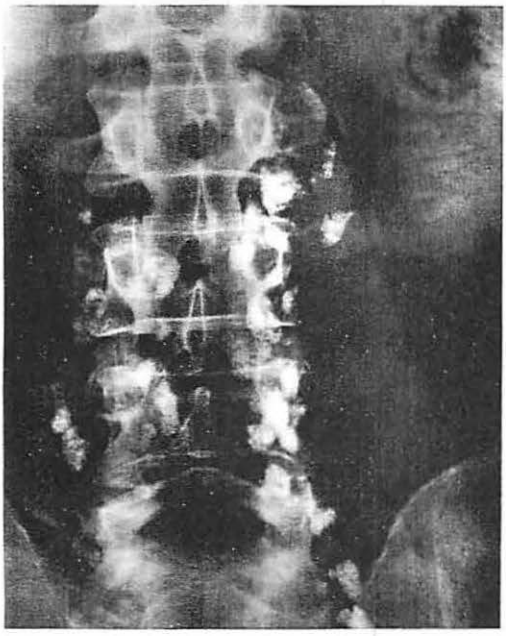
Fig. 2 Venography of the left renal and left testicular veins as supplement to lymphography in a patient with lumbar metastasis from carcinoma of the left testicle.
a) Lymphadenogram and venogram on admission. Note upward displacement of the renal vein and lateral displacement of the testicular vein.
b) Repeat examination 8 months later after chemotherapy. Definite reduction in size of lumbar mass.

on histological examinations was found to be a malignant lymphoma. The initial response to chemotherapy was favorable.

Patient No. 2. Twenty-four year old male with a malignant teratoid tumor of the left testicle removed prior to admission. An abdominal tumor was felt by palpation. Lymphographic examination disclosed a large metastatic mass, which was clearly outlined caudally and to a certain extent medially. Supplementary examination of the left renal and testicular veins yielded further information about the extent of the metastases in lateral and proximal direction (Fig. 2a). The condition of the patient was improved by chemotherapy. A repeat examination 8 months later (Fig. 2b) showed a definite reduction in the size of the lumbar metastatic mass.

Patient No. 3. Forty-eight year old male. The only pathologic finding on clinical examination was a tumor of the left supraclavicular fossa which was subjected to biopsy. Histologic examination showed Hodgkins disease, lymphocytic predominance type. A lymphographic examination (Fig. 3a) showed nodes with filling defects in the upper left lumbar region, interpreted as suspicious with regard to malignancy. A supplementary examination of the left testicular vein in anteroposterior projection (Fig. 3b) revealed a slight lateral dislocation, while films in lateral projection (Fig. 3c) showed a definite forward displacement of the upper part of the testicular vein. A subsequent staging laparotomy indicated involvement of the spleen and liver. Unfortunately, the lymph node biopsy was taken from a lymphographically normal-appearing node at the level of the fourth lumbar vertebra. Histologic examination of this node showed irregular lymphoid hyperplasia with eosinophilic cells but no Reed-Sternberg cells. Although definite histologic proof was not obtained in this patient, wie feel that the combined lympho- and venographic findings strongly suggest involvement of the left upper lumbar nodes.



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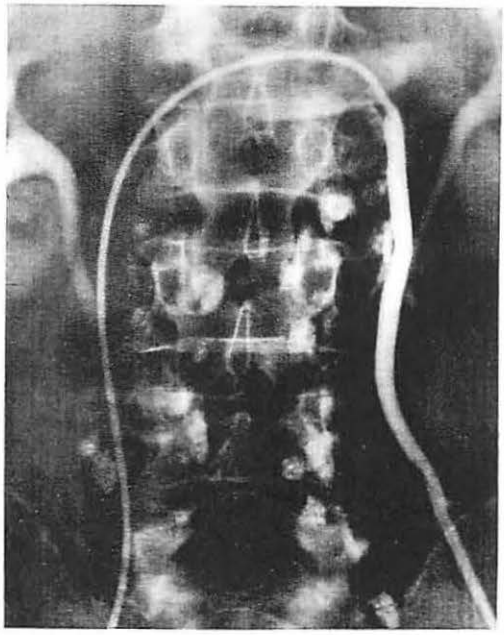

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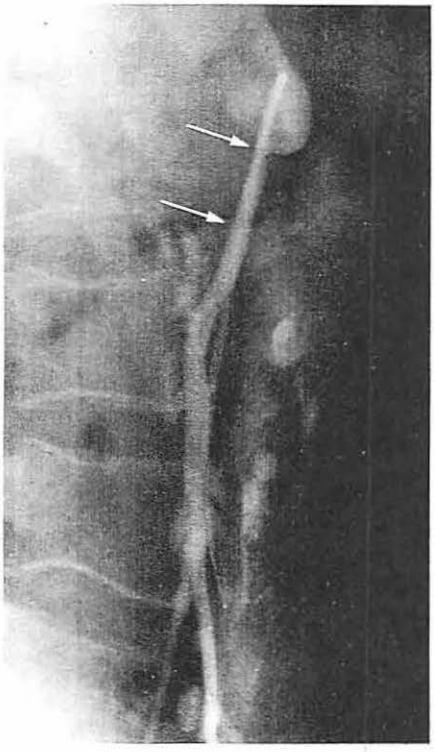

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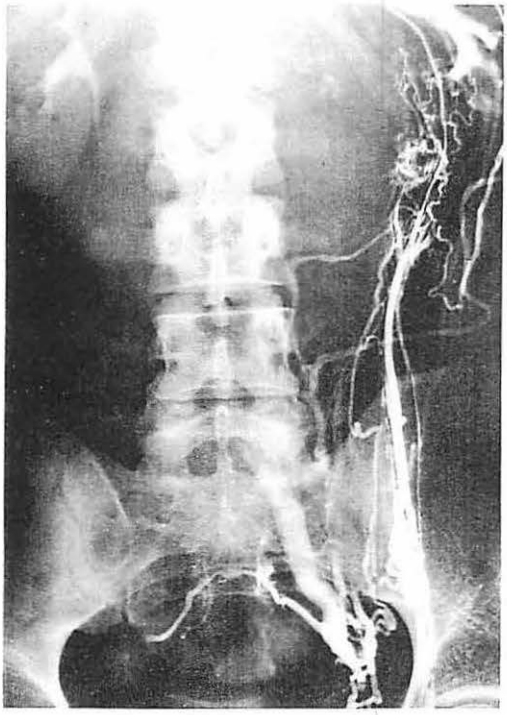
Fig. 3 Lympho- and venographic examination of patient with malignant lymphoma of a left supraclavicular lymph node.
a) Lymphadenogram. Nodes of the upper left lumbar region with defects suspicious of malignancy.
b) A.p. projection of left testicular vein.
c) Lateral projection. Forward displacement of the cranial part of the left testicular vein (arrows) supports suspicion of malignant involvement.

Patient No. 4. Thirty-four year old male with a tumor of the left testicle and a palpable abdominal mass. In connection with surgical removal of the left testicle, a funicular lymphography was performed. In addition water soluble contrast medium was injected into a funicular vein (Fig. 4a). The examinations demonstrated large retroperitoneal masses. Microscopy of the testicular tumor indicated seminoma.

Irradiation treatment was therefore administered. A repeat examination of the left testicular vein was performed 9 months later with retrograde contrast medium injection. At this time the examination revealed a considerable improvement. A slight bulging of the vein indicated, however, that the tumor masses had not disappeared completely (Fig. 4b).



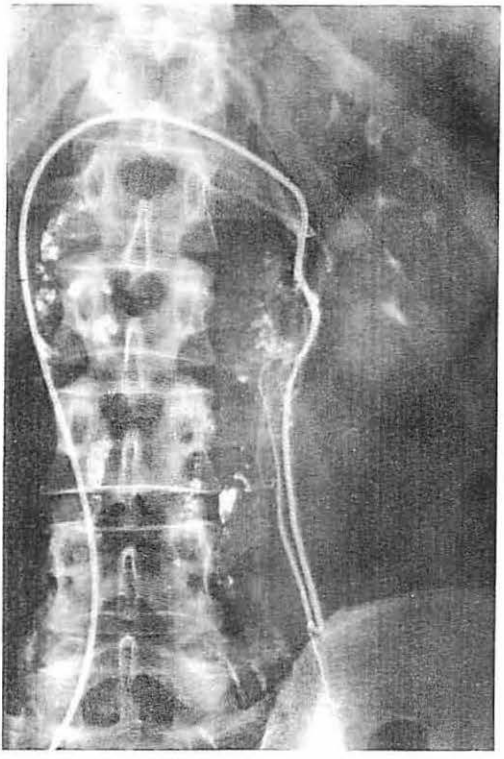


Fig. 4 Venography of the left testicular vein in patient with seminoma of the left testicle.
a) Venogram obtained by contrast medium injection into a funicular vein during removal of the testicle. Marked displacement of the testicular vein and kidney, and extensive filling of collateral veins.

b) Venogram by retrograde injection 9 months later shows good effect of irradiation treatment. A slight lateral bulge indicates that the tumor masses have not completely disappeared.

Discussion

Several radiologic examinations have been proposed as complementary to lymphography in the search for primary or secondary malignant growth of the retroperitoneal lymph nodes. The most common in routine radiology is inferior vena cavography which is indispensable when involvement of the upper right lumbar region is suspected (7). Venography of the left renal and gonadal veins may in our opinion give valuable additional information about pathology in the left lumbar region. These examinations are helpful in assessing the extent of tumor masses, and thereby in planning the extent of irradiation portals. Parameters of treatment effect are essential for proper evaluation of the increasing number of chemotherapy regimes available. Repeat examinations of the left renal and gonadal veins may provide valuable information in this respect. Retrograde injection of contrast medium into the left gonadal vein is often difficult when large metastases compress or infiltrate the left renal vein. In the case of testicular tumors, however, a gonadal venography may still be possible by antegrade injection in the funicular veins in connection with removal of the involved testicle (10). If therapeutic measures are successful, repeat examinations may later be performed by the retrograde approach, after reduction in size of the retroperitoneal masses. Renal and gonadal venography have mostly been performed in connection with diseases such as varicocele scroti (1), and in differentiation between congenitally absent and small contracted kidney (2). Examination of the left renal vein has also been performed in evaluation of suspected malignant tumors of the pancreas (3). These examinations have, however, to our knowledge not been listed among the supplementary examinations to lymphography. We believe that the venographic procedures described above should be performed whenever doubt exists about the presence or extent of leftsided retroperitoneal malignant growth.

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Diffuse Lymphangiomyomatosis

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Summary

A case of diffuse lymphangiomyomatosis with involvement of the large veins of the body is reported. The clinical, pathologoanatomic and especially the roentgenologic findings are described. Interstitial lung thickening, pleural effusions and spontaneous pneumothorax are findings which together with a stasis in the lymphatic system strongly suggest the diagnosis. The extensive involvement of the venous system supports the theory of a hamartomatous nature of the disease.

Lymphangiomyomatosis is a condition characterized by smooth muscle proliferation in the lymph vessels and lymph nodes, especially those of the retroperitoneum and posterior mediastinum, and more often than not through similar changes in the perilymphatic regions throughout the lungs.