

- 10 *Cremer, H., N. Müller*: Lichtmikroskopische Untersuchungen an Nieren sowie lipidchemische Untersuchungen im Serum nach Unterbindung des Ductus thoracicus bei Ratten. *Virchows Arch. Abt. A Path. Anat.* 357 (1972) 67-69
- 11 *Gerlach, U., H. Theman, T.Ö. Zoltan*: Untersuchungen des Leberstoffwechsels bei experimentellen Störungen der Lymphzirkulation. In: *Beck, K.*: Ikterus, 58-63. Schattauer, Stuttgart 1968
- 12 *Cremer, H., N. Müller*: Morphologische Veränderungen an der Rattenaorta nach experimenteller Ligatur des Ductus thoracicus. *Virchows Arch. Abt. A Path. Anat.* 359 (1973) 223-229
- 13 *Cremer, H., N. Müller*: Histological findings in the aorta of rats after experimental ligation of the thoracic duct. *Folia Angiologica* 21 (1973), 270-273
- 14 *Haust, M.D.*: The morphogenesis and fate of potential and early atherosclerosis lesions in man. *Human Pathology* 2 (1971) 1-29
- 15 *Akisada, M., M. Georgi*: Lymphographische Untersuchungen bei operativen Blockaden am Lymphsystem der Ratte. *Fortschr. Röntgenstr.* 112 (1970) 813-818
- 16 *Malek, P.*: Lymphatic regeneration in transplantation. In: *Handbuch der Allgemeinen Pathologie, Bd. III: Zwischensubstanzen. Gewebe, Organe. Sechster Teil: Lymphgefäßsystem, 579-594.* Springer, Berlin 1972
- 17 *Blalock, A., C.S. Robinson, R.S. Cunningham, M.E. Gray*: Experimental studies on lymphatic blockage. *Arch. Surg.* 34 (1937) 1049-1071
- 18 *Yoffey, J.M., F.C. Courtice*: Lymphatics, lymph and the lymphomyeloid complex. Academic Press, London 1970
- 19 *Courtice, F.C.*: The chemistry of lymph. In: *Handbuch der Allgemeinen Pathologie, Bd. III: Zwischensubstanzen. Gewebe, Organe. Sechster Teil: Lymphgefäßsystem, 311-362.* Springer, Berlin 1972
- 20 *Engelhardt, A.*: Metabolische Aspekte der Fettsucht. *Dtsch. med. Wschr.* 97 (1972) 161-166

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Value of Lymphography in Detecting Metastatic Cloacogenic Carcinoma

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Summary

Cloacogenic Carcinoma is a rare and highly malignant tumor arises from the transitional cloacogenic zone of anorectal junction. These tumors metastasise by direct invasion and via the lymphatic channels to the regional lymph nodes. Lymphography was utilized to diagnose metastatic cloacogenic carcinomas and in 3 patients positive nodes were found on lymphography. This is a preliminary report describing the findings of metastatic cloacogenic tumors on lymphography and the author recommends utilization of this diagnostic procedure in the work up of cloacogenic carcinoma.

Value of lymphography in detecting metastatic cloacogenic carcinoma

Cloacogenic carcinoma is a highly malignant lesion arising from the transitional cloacogenic zone of anorectal junction. Although it has been recognised as a distinct clinico-pathologic entity since 1956, information regarding radiological diagnosis still is

sparse (2, 5). Since the prognosis of cloacogenic carcinoma is greatly dependent upon the extent of the tumor at the time of discovery early detection of possible metastatic lesions is of utmost importance if one is to control the disease. The route of metastases of cloacogenic carcinoma is predominately by direct invasion and via the lymphatic channels to the regional lymph nodes. Lymphography was utilized to diagnose the metastatic lesion of cloacogenic carcinoma and in three patients positive nodes were detected on lymphography. These lymphographic findings were subsequently confirmed histologically. It is a preliminary report of the lymphographic findings of cloacogenic carcinoma in these patients and an emphasis is made upon the utilization of this diagnostic procedure which has a high rate of diagnostic accuracy to detect metastatic lesions from cloacogenic carcinoma.

Report of Cases

Case I. This is a 49 years old female patient who was evaluated for a four month history of rectal pain and tenesmus. She denied having any rectal bleeding or melena. A small rectal tumor was found on the rectal examination and it was biopsied. The pathologic diagnosis was cloacogenic carcinoma.

The patient was then admitted for curative surgical procedure with abdominal perineal resection. The past history was non-contributory. The pertinent findings on the physical examination consisted of a mass measuring 1.5 x 3 cm in the distal rectum located posteriorly which was firm and tender. Routine laboratory studies were within normal limits. Barium enema examination confirmed the presence of the rectal mass located posteriorly (Fig. 1), but no other lesion was detected. Lymphangiogram of the lower extremities was performed to evaluate the possible metastases along the pelvic and inguinal chains of lymph nodes. This revealed a marginal filling defect in the lymph node along the internal iliac chain on the left side and in addition, there was circumventing of lymphatic channels just distal to the positive lymph node on a 24 hour follow-up examination indicating obstruction of the lymph node by metastatic disease (Fig. 2). The patient subsequently underwent abdominal perineal resection along with pelvic lymphadenectomy. The histological diagnosis of the tumor was again cloacogenic carcinoma of rectum, transi-

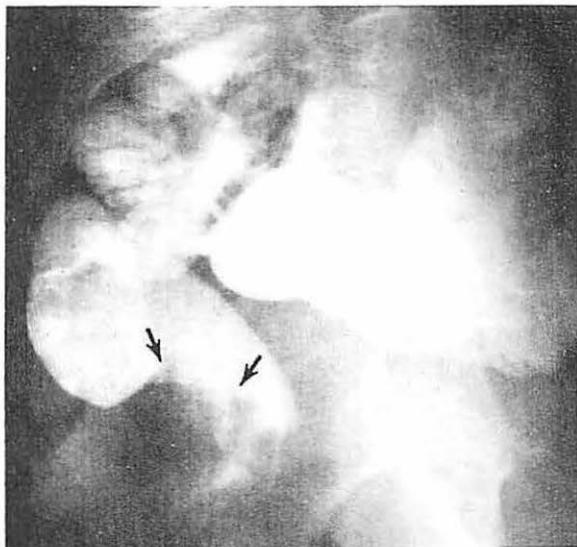


Fig. 1, Case I Lateral view of the rectum in a barium enema study showing a plaque-like shelving defect (arrows) due to cloacogenic tumor



Fig. 2, Case I. A 24 hour follow-up (nodal phase) lymphogram reveals marginal filling defects in a left pelvic lymph node (back arrowheads). A circumventing lymphatic channel (open arrow) indicates tumor replacement of lymph node causing obstruction.

tional type. The positive lymph node seen on lymphangiogram in the pelvis on the left side and another adjacent and distal lymph node were the only two lymph nodes out of 14 removed from the pelvis which contained tumor. The second positive lymph node found in the pelvic section was seen in the lymphangiogram indirectly as circumvented efferent lymph channels because of tumor obstruction of the lymph node. This finding correlated well with the pathologic specimen. Dissection of the inguinal lymph nodes was not performed in this patient at this time.

The patient's immediate post-operative course was uneventful. She was subsequently irradiated to her left groin and along the internal iliac lymphatic chains on both sides of the pelvis without any noticeable response. Approximately a year later, she was readmitted with gross metastatic disease of the right inguinal lymph nodes, the lungs and the liver. She also had a recurrent tumor of 5 x 4 cm in an area posterior to the vagina. The patient was further treated with 5-F.U. chemotherapy in addition to irradiation without significant response.

Case II. This is a 45 year old female patient who was well until 1969 when because of rectal itching hemorrhoidectomy was performed. Squamous cell carcinoma was incidentally discovered in the specimen of hemorrhoid surgery. A wider resection of perianal skin was then performed. She did well until 1971 when she was found to have recurrence on the recto-vaginal septum. An abdominal perineal colostomy was performed. Subsequently, she was found to have perineal nodules which when biopsied revealed recurrent cloacogenic carcinoma squamous cell type. Lymphangiogram was performed to evaluate the metastatic disease of cloacogenic carcinoma in the regional lymph nodes and it showed marginal filling defects consistent with metastatic tumor in the right superficial inguinal nodes and right iliac nodes (Fig. 3). These findings were subsequently confirmed at operation and the nodes were found to be histologically positive for cloacogenic carcinoma. At this time, the patient also has liver metastases.

Case III. This is a 61 year old female who was in good health until three months prior to admission when she experienced increasing constipation and decrease in the caliber of stools. This was punctuated with episodes of diarrhea and occasional minor episodes of rectal bleeding. Her past

Fig. 3 Case II. A 24 hour follow-up lymphogram showing marginal filling defects in pelvic lymph nodes (open arrow) and in superficial inguinal lymph node (black arrow) on the right side.



Fig. 4 Case III. A 24 hour follow-up lymphogram revealed marginal filling defects in pelvic lymph nodes (arrows) on the left side. (a) an antero-posterior view (b) a right posterior oblique view.

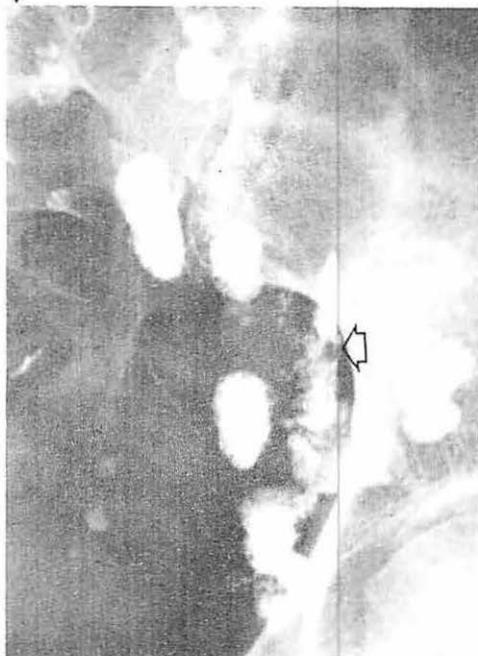


Fig. 4a



Fig. 4b

history was noncontributory. Pertinent physical findings were limited to the ano-rectal area. There was a mass approximately 6cm in length growing circumferentially around the anus and extending into the rectum. Biopsy of the lesion showed cloacogenic carcinoma with predominate basaloid type. Lymphography revealed marginal filling defects in pelvic lymph nodes on the left side consistent with metastatic tumor (Fig. 4). The patient subsequently underwent an abdominal perineal resection with dissection of inguinal and pelvic lymph nodes. The pathologic findings confirmed the lymphographic diagnosis of metastatic tumor in the left pelvic node.

Discussion

Cloacogenic carcinoma is a rare tumor that arises from the transition of cloacogenic zone of the ano-rectal junction. Cloacogenic carcinoma was described originally by *Grinvalsky* and *Helwig* (3) in 1956 and since that time it has been classified and recognized as a separate clinico-pathological entity among the malignancies of ano-rectal junction. These carcinomas differ in histologic pattern from the more common adenocarcinoma of the rectum and squamous cell carcinoma of the anus; the prognosis is also worse than the other two (4, 6). The patients with cloacogenic carcinoma present no specific clinical symptomatology and the lesions have no characteristic gross appearance. Various symptoms that the patients may have include rectal bleeding, rectal pain, constipation and change of bowel habit (1). A few cloacogenic tumors are found in asymptomatic patients during routine physical examination or during hemorrhoidectomy (4). The tumor is usually palpable in the rectum and may have ulcerations but there are no gross characteristic features in the clinical examinations. They occur more commonly in females in the middle ages. The duration of various symptoms ranges from a few weeks to over a year.

Although the clinical symptomatology is variable roentgenologic appearance on the barium enema examination is rather characteristic and early recognition of the tumor is entirely possible if one is aware of its subtle, but significant features. On barium enema, these tumors present as plaque-like, projecting into the lumen of the anus or distal rectum from one wall. The edges of the lesion form a smoothly tapered obtuse angle with the surrounding bowel wall rather than an acute angle as seen in the sessile polyps. This appearance on the barium enema examination is believed to be characteristic of cloacogenic carcinoma (Fig. 1). The roentgenologic appearance of this tumor on the barium enema examination has been reported elsewhere previously (2, 5).

The tumor spreads primarily by way of local invasion and metastases to the regional lymph nodes. The prognosis is greatly dependent upon the extent of the tumor at the time of discovery and therefore, not only the early recognition of the lesion but also determination of the extension of the tumor is very important. Once metastasis occurs in the regional lymph nodes the prognosis is very grave and the tumor spreads rapidly (1, 5, 6). Since the tumor metastasise to the regional lymph nodes, lymphography is a logical diagnostic procedure of choice to determine the extent of the disease. The lymphatic vessles of the cloacogenic zones drain into the sacral lymph nodes, internal and common iliac nodes, and superficial inguinal lymph nodes. Lymphography is highly useful in detecting metastases and correlated closely cloacogenic carcinoma is similar to that of other metastatic carcinomas of the regional lymph nodes. The positive findings are 1) marginal filling defects of the lymph node, 2) retention of contrast medium in the affarant vessles, 3) circumventing of lymphatic vessles of all involved lymph nodes during the lymphatic phase because of obstructive pathway by the metastatic carcinoma (Fig. 2). The treatment is an abdominal perineal resection with wide excision of the perineal skin and soft tissues with concomitant lymphadenectomies of the inguinal and pelvic lymph nodes.

Lymphography is also useful in detecting completeness of lymphadenectomies doing operations simply by checking opacified nodes on an abdominal x-ray film in the operating room. It is to be emphasized that the lymphatic drainage of the distal portion of the cloacogenic zone is to the superficial inguinal lymph nodes. These lymph nodes should be carefully examined in the lymphogram and they are to be included in the lymph node dissection at operation, along with the pelvic nodes. Case 1 is an example demonstrating failure to include inguinal lymph nodes in lymphadenectomy and the patient returned with tumor in the inguinal lymph nodes and wide spread metastasis. False positive changes in the lymph nodes in this region are common and the usual cautions also apply here when interpreting the inguinal lymph node metastases.

References

- 1 Cullen, P.K., Jr., Pontius, E.E. and R.J. Sanders: Cloacogenic Anorectal Carcinoma. *Dis. Colon and Rectum* 9 (1966) 1-12
- 2 Glockman, M.G., A.R. Margulis: Cloacogenic Carcinoma. *Amer. J. Roentgenol., Rad. Therapy and Nuclear Medicine.* 107 (1969)175-180
- 3 Grinvalsky, H.T., E.B. Helwig: Carcinoma of Anorectal Junction. I Histological Considerations. *Cancer* 1956, 480-488
- 4 Grodsky, L.: Cloacogenic Cancer of Anorectal Junction: report of seven cases. *Dis. Colon and Rectum* 6 (1963) 37-44
- 5 Kyaw, M.M., T. Gallagher, J.O. Haines: Cloacogenic Carcinoma of Anorectal Junction: Roentgenologic Diagnosis. *Amer. J. Roentgenol., Rad. Therapy and Nuclear Med.* 115 (1972) 384-391
- 6 Mainer, J., C. Bowerman: Cloacogenic Carcinoma of Anorectal Junction. *Gastroenterology* 49 (1965) 569-573

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Thorotrast Granuloma of Periaortic Nodes

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Enlargement of periaortic nodes with multiple small filling defects on lymphangiography in a patient with history of low grade fever, weight loss, night sweats and general malaise, strongly suggests the possibility of retroperitoneal Hodgkin's disease if an infectious, chronic granulomatous disease can be excluded. In the patient reported here, the final histological diagnosis was a quite unusual one: thorotrast granuloma.

A 55-year-old male was admitted to Flushing Hospital because of low grade fever of six-