Urogenital complications and incidental urogenital findings in Crohn's disease

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Aims and objectives

Crohn's disease is a chronic granulomatous inflammatory disease of the gastrointestinal tract with a tendency toward remission and relapse. Abscesses, fistulas, strictures or adhesions of intestinal segments are among well-known complications of Crohn's disease. The presence of a fistula which is defined as a pathological connection between two epithelial surfaces, usually indicates a more aggressive course of the disease. Fistulas occur in 14-26% of patients, and perianal fistulas comprise half of all cases. Enteroenteric fistulas comprise 25%, recto/anovaginal comprise 10% and other fistulas including enterocutaneous and enterovesical fistulas account for 10-15% of all fistulas in Crohn's disease. Some of these patients may experience more than one fistula episode and may need different radiological examinations.

Various imaging studies are used during the lifelong clinical follow-up of this disease. Computed tomography (CT) has become the primary imaging modality due to its widespread availability, fast scanning time, and ability to produce high-resolution 3-dimensional images. Magnetic resonance imaging (MRI) has gained importance in the evaluation of Crohn's disease due to the lack of ionizing radiation exposure, as these patients may require many imaging studies over the course of their lifetime. Besides, with its high soft tissue contrast MRI is considered as the best imaging study in the diagnosis of perianal fistulas.

CT and MRI features of the bowel and adjacent mesentery can provide useful information about disease activity. Cross sectional imaging studies may also allow identification of extraintestinal Crohn related complications as well as extraintestinal manifestations. Many incidental findings can also be detected during the investigation of Crohn related pathologies. Involvement of the urogenital organs is not uncommon in patients affected with Crohn's disease but they can be underestimated because of the dominant gastrointestinal symptoms.

The aim of this study is to call attention to possible urogenital complications of fistulising Crohn's disease and also to demonstrate incidental radiological findings.
Methods and materials

We retrospectively evaluated 43 consecutive patients with histopathologically proven Crohn’s disease and with a suspicion of perianal fistula/abscess who underwent contrast enhanced pelvic MRI in our department between January 2011-May 2015. Sixteen of these patients did not have any other radiological examinations demonstrating the urogenital organs. These patients were excluded and 27 patients with fistulising Crohn’s disease and with additional radiological examinations involving the urogenital organs were enrolled. There were 14 female and 13 male patients with a mean age of 40 years. The age range was between 22-65 years. Besides pelvic MRI all patients had undergone abdominal CT and/or ultrasonography (US). The images retrieved from local PACS (Centricity, GE Healthcare) were retrospectively interpreted.

The intestinal distribution of Crohn's disease was noted. The perianal fistulas of the patients were classified according to the Parks classification system on pelvic MR images. Kidneys, ureters, bladder, prostate, uterus and vagina were retrospectively interpreted on CT and MR images of the patients for co-existing urogenital disorders.

MRI was performed at either a 1.5 T MR system (Optima 450W, GE Healthcare) or at a 3T MR system (Magnetom Verio, Siemens Health Care) using torso phased array coils. All CT studies were performed on a 16-slice CT system (Brightspeed, GE Medical Systems ).
Results

In five of the 27 patients, Crohn's disease was confined to the ileum. In 14 patients the disease involved both ileum and colon and in eight patients only colon was involved.

There were complicated perianal fistula with secondary tracts in 20 patients, and isolated intersphincteric fistula in two patients. In five patients no perianal fistula was detected but pelvic abscesses with or without intestinal fistula were seen.

In two patients hydronephrosis was detected with accompanying fibrosis in pelvis. One of these two patients had right sided hydronephrosis, hydrosalpinx and colovesical fistula (figure 1). There was bilateral ureterohydronephrosis with right sided renal atrophy in the other one (figure 2). There was an anovaginal fistula in three patients (figure 3), sequel of pyelonephritis in kidneys in two patients, enterovesical fistula in one patient, and an abscess which causes displacement in uterus in one patient (figure 4). The overall incidence of Crohn related urogenital complications were 33%.

The incidental urogenital findings were as follows; simple renal cysts in five patients, myoma uteri in two patients, utriculus cyst in two patients, nephrolithiasis in two patients (figure 5), adrenal adenoma in one patient, and renal angiomyolipoma in one patient.
Fig. 1: On T2 weighted coronal MR image of a patient with fistulising Crohn's disease, adhesions between uterus (U), bilateral dilated uterin tubes (T), sigmoid colon (S) and bladder (arrow) can be seen. Note that the lumen of the sigmoid colon is narrowed, and the walls are thickened. The uterin tubes are dilated and fluid filled. There is diffuse thickening of the bladder wall which is more significant in the upper wall (arrow).
Fig. 2: Fig 2A: On contrast enhanced axial CT scans of a male patient with advanced Crohn’s disease who had undergone right hemicolectomy, the involvement of the sigmoid colon and ileum (thick arrows) and also mesenteric lymphadenopathies (thin arrows) can be seen. Note the fibrotic presacral soft tissue (star) and dilated ureters (curved arrows).

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Fig. 3: Fig 2B: On axial CT and coronal FSEIR MR images of the same patient bilateral hydronephrosis with right sided renal atrophy is well demonstrated.

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**Fig. 4:** Axial FSEIR and fat saturated contrast enhanced T1 weighted MR images demonstrate a hyperintense fistula tract (arrows) between vagina (star) and the anal canal with prominent contrast enhancement.
Fig. 5: Fig 4: Contrast enhanced axial CT scan shows an abscess (A) adjacent to the uterus (U). Note the involved sigmoid colon (thick arrow) and lymph nodes in the ischiorectal fossa (thin arrows).

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Fig. 6: On axial CT scans, the involvement of the ileum and sigmoid colon, small mesenteric lymph nodes, and increased mesenteric vascularity are well demonstrated. And also small renal stones (arrows) are seen in the right kidney (arrows).

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Conclusion

Transmural penetration of inflammatory changes leading to fistulization into adjacent structures, and/or abscess collections can be seen in advanced Crohn's disease. Communications between the intestinal segments and bladder, vagina or uterus may occur. Fibrosis and adhesions in the pelvic region may cause ureterohydronephrosis which may lead to parenchymal changes in kidneys. Therefore urogenital structures in the field of view on imaging studies must be examined with careful attention. Besides, it should be kept in mind that incidental urogenital disorders can be diagnosed on imaging studies during the lifelong follow-up of Crohn's disease.
References


