A 77-year-old woman was seen by her general practitioner because of a changed defecation pattern. On a CT colonography, which was otherwise normal, bone abnormalities were present. The patient had no previous history of malignancy.

Imaging Findings:
CT abdomen demonstrated sclerotic lesions of variable size diffusely distributed in the spinal column, the pelvis, shoulder girdle and hip region (Fig. 1-4). Biopsy proved it to be caused by mastocytosis.

Discussion:
In Systemic Mastocytosis (SM) there is an accumulation of morphologically and immunophenotypically abnormal mast cells in various organs [1-3]. Bone marrow infiltration may be the only tissue involved [1]. One possible pathophysiologic mechanism in SM is chemotaxis and proliferation of mast cells promoted by autocrine or paracrine secretion of stem cell factor. Another possible pathophysiologic mechanism is associated with the abnormal level of tyrosine kinase receptors on the surface of the mast cells which in turn leads to activation of the latter [1]. Bone marrow infiltration is usually asymptomatic, but spine pain and arthralgia may be present [1]. Flushing, gastrointestinal complaints and anaphylaxis can be other symptoms [3].

According to the WHO SM is diagnosed when one major and one minor or three minor criteria are present [3]. The major criterion is multifocal, dense aggregates of mast cells in bone marrow and/or extracutaneous biopsy. The minor criteria are > 25% of the mast cells in bone marrow or extracutaneous tissue with atypical morphology, mast cells in bone marrow co-expressing CD117 with CD2 and/or CD25, the presence of KIT point mutation at codon 816 in bone marrow, blood, or other extracutaneous organs and serum total tryptase persistently >20 ng/ml [2, 3]. Skeletal involvement in SM is evaluated with plain radiographs, CT, MR and bone scintigraphy. Disease extend can be demonstrated with bone scintigram. CT and MRI are more sensitive than conventional radiographs. Bone marrow infiltration is best detected on MRI. Imaging can also be used to monitor therapy and assess for complications like impending fractures or neuroforaminal stenosis [1, 3, 4]. Skeletal abnormalities include in decreasing frequency osteopenia/ osteoporosis, osteosclerosis, or a combination of both. Osteolytic lesions can be well or poorly demarcated and may be surrounded by a sclerotic zone. On MR bone marrow infiltration is hypo-intense on T1-weighted imaging. On T2-weighted STIR imaging bone marrow infiltration is hyper-intense but may be hypo-intense, depending on the proliferation of fibroblast. Sclerotic lesions are hypo-intense on T1 and T2 sequences. The distribution can be diffuse or focal with predominance in the axial and/or the appendicular skeleton. In response to treatment T1-weighted signal is increasing while T2-weighted signal...
decreases. Because of the osteopenia pathologic fractures are seen in 16% of the cases [1, 4]. The therapy for SM is palliative [3]. Elderly age and bone involvement in SM are associated with a poor prognosis [1].

**Differential Diagnosis List:** Systemic mastocytosis of the bone marrow, Multiple myeloma and POEMS syndrome, Metastasis of unknown primary, Leukemia, Osteopetrosis, Myelofibrosis, Paget disease, Sickle cell disease, Gaucher disease

**Final Diagnosis:** Systemic mastocytosis of the bone marrow

**References:**


Description: Axial CT images of the abdomen with oral contrast showing poorly defined sclerotic lesions diffusely distributed in the vertebral corpus. Origin: Department of radiology, Tweesteden hospital Waalwijk, Netherlands
**Description:** Axial CT images of the abdomen with oral contrast showing poorly defined sclerotic lesions diffusely distributed in the pelvis. **Origin:** Department of radiology, Tweesteden hospital Waalwijk, Netherlands
Description: Coronal CT image of the thorax with intravenous contrast showing diffusely distributed sclerotic lesions in the thoracic spine, the ribs and the shoulder girdle. Origin: Department of Radiology, Tweesteden Hospital, The Netherlands
Description: Sagittal CT image of the thoracolumbar spine showing sclerotic lesions diffusely distributed in the spine. Some of the lesions are poorly defined and some are well circumscribed.

Origin: Department of Radiology, TweeSteden Hospital, The Netherlands