or with nodules of Schmorl, in isolation or in a maximum of two vertebral bodies, to distinguish it from Scheuermann's disease (2). Image 1.

Objectives: Current vertebral indexes, don't measure a relation between a person height and his vertebra, and if the harmony of the individual is accepted, an index that combines these variables must be created in order to guaranteeing the objectivity of the resultant value.

Image 1: MRI of the spine with two dorsal flat vertebrae (7th and 8th) in which their vertebral bodies do not get larger farther down the column, showing disproportion in relation to immediately above and below vertebrae.

Figure 1

Figure 1. With a chest lateral plate, not rotated, and in the eighth dorsal vertebra (VD8), by proximity to the Scheuermann kyphosis, we calculate his length (LVD8) and his height (HVD8), measured in mm. Thus, from the horizontal one of his pedicle, taken at that height and parallel to the vertebral plate with superior disc contact, LVD8 is 35.50mm. Drawing a line perpendicular to the previous one (90.1°), and measured from the most sclerous area of the vertebral plate with disc contact superior to inferior, passing through the midpoint of its length (17.74mm), we obtain a HVD8 of 20.69mm.

Figure 2

Methods: Patients attending physician since 1994, both sexes, 20-55 years old, in whom Type II collagen disease or vertebral dysplasia was suspected, were selected for the study. A control group was created from patients that didn't fulfill the last inclusion criteria. Their medical histories were taken. Eighth dorsal flat vertebra in a lateral chest radiograph were assessed by tripleobserver (two rheumatologists and one radiologist) according to the defined criteria. In all selected patients, a DEXA osteoporosis screening was performed, being chest trauma exclusion criteria.

Finally, a descriptive study was carried out and a comparative study of average of vertebral index of the eight dorsal vertebra (VIDV8) results was applied: $VIDV8 = 10 \times LVD8 / (HVD8 \times \text{stature})$. Image 2.

Results: 174 subjects were analyzed, 84 in the study group and 90 in the control one, both homogeneous and without statistically significant differences in sex, age and height, with an average value in the study group of 47.15 years old, 48.8% women, 80.5 kg and 1.64 m. In control group: 44.5 years old, 52.2% women, 78.5 kg and 1.65 m. The VIDV8 value, did not show any significant difference compared to the previous variables, except for patient cohort, with an average value of 10.1 Meters-1 in control group, and 12.5 Meters-1 in pathological one ($p < 0.001$). To a value of 11,108 Meters-1 the sensitivity is 90.5% and specificity 92.2%.

Conclusion: The VIDV8 is stable for the variables sex, age, height, and weight. To an outcome of 11,108 Meters-1, it discriminates both groups with sensitivity of 90.5% and specificity of 92.2%, in order to avoid the ambiguity of the explorer.

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AB1186

PELVIC CT CONTRIBUTIONS FOR EARLY DIAGNOSIS OF INFECTIOUS SACRO ILIITIS

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Background: The sacroiliac joint is a rare localization of septic arthritis whose diagnosis is often delayed due to a heterogeneous and non-specific clinical presentation. The gold standard for diagnosis in osteo-articular infections is MRI, but its emergency access is sometimes difficult and the acquisition time of this imaging mode is long.

Objectives: To look for early CT scan signs suggestive of infectious sacro ilitis.

Methods: In a monocentric retrospective study at the Besançon University Hospital between January 2013 and March 2018, we analyzed the cases of septic arthritis of the sacroiliac joints in subjects over 18 years of age. We studied the clinical, biological and imaging data of each patient.

Results: 7 cases of infectious sacro-iliitis were collected. The characteristics of the patients were: 57% male, average age 44.1 years, left sacroiliac in 4 cases, fever in 57%, average CRP 184mg/l, average leucocytes 12500/ml. 3 patients were immunocompromised, 1 patient was postpartum. In 5 cases, bacteriological documentation was found (1 multisensitive aureus staphylococcus, 2 streptococci, 2 Gram negative bacilli). In the last 2 cases, no germ could be detected due to antibiotic therapy initiated before their hospitalization, but the clinical presentation, biology, imaging and evolution under antibiotics were in favour of an infectious etiology. The 7 patients underwent a pelvic CT scan during their hospitalization, on average 6 days after the beginning of their symptoms. 4 early signs in favour of the diagnosis of infectious sacro ilitis could be identified: fat infiltration in front of the sacroiliac joint in 86% of cases, bulging and elevation of the anterior part of the joint capsule in 43%, swelling of the piriform (71%) and iliac (71%) muscles on the sacroiliac side. All patients had at least 1 positive sign out of 4, 86% had at least 2. In 1 case, signs of osteitis were present. In 4 out of 7 cases, the injection of iodized contrast medium did not provide any additional element compared to the non-injected sequences. 5 patients underwent an MRI after the scan, which confirmed the signs in favour of the infectious nature of sacroiliitis. MRI detected in one case an aspect of osteomyelitis of the sacrum and iliac bone, but also a hypersignal of the joint space on the T2 sequences (80%) and a better visualization of abscesses.

In the literature, there is data on the interest of the CT scan for the diagnosis of infectious sacro ilitis (1) but there is no precise description of the early signs suggestive apart from the signs of osteitis, which appear later. Hermet et al (2) advised to be careful if the scan is performed within 3 days after the onset of symptoms, but our short series shows that some signs are positive even if the pelvic scan is performed very early. The interest of the scanner, in addition to its rapid access and acquisition, allows on the injected sequences to rule out differential infectious diagnoses of abdominal-pelvic or gynaecological origin, the clinic being sometimes put in defect.

Conclusion: Despite its radiant nature, the scanner can be a preferred accessible alternative to MRI for the diagnosis of infectious sacro ilitis with the detection of 4 signs of early onset.

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AB1187

IMPACT OF IN-CLINIC ULTRASOUND ON AGE AND GENDER OF PATIENTS SCANNED AND DETECTION OF SYNOVITIS – RESULTS FROM A QUALITY IMPROVEMENT PROJECT

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Background: Inflammatory arthritis is more common in women, and the majority of patients have onset before the 6th decade. Synovitis can be difficult to diagnose clinically in the early stages, and can be especially easy to miss where the index of suspicion is low, such as men and the elderly. Ultrasound (US) can confirm synovitis and other conditions in Rheumatology, particularly where examination features are not very obvious. US has traditionally been offered via Radiology services in our hospital as a separate appointment following referral from the

Rheumatology clinic, with variable waiting times causing potential delay in starting treatment such as DMARDs. There is also a cost implication with respect to commissioning of the Radiology scan appointments. In Bolton, an US system was installed in Rheumatology from 2016 to perform in-clinic US, for improving access and reducing referrals to Radiology.

Objectives: We aimed to assess the US usage pattern before and after the new Rheumatology US was installed, with respect to access based on age and gender, the pattern of scanning in-clinic, and rate of synovitis diagnosis, using a quality improvement framework.

Methods: US referral data from the Radiology department from October 2015 to March 2016 were collated as baseline on a MS Access database. Two Consultant Rheumatologists performed US in-clinic. From May to October 2016 Rheumatology in-clinic data, and also Radiology referral data were collated on the database for comparison. Patient demographics and diagnoses were collated from clinic letters. Descriptive statistics were processed in MS Excel 2010.

Results: Between October 2015 and March 2016, 68 patients (median age 52 yrs; 28% male) had scans in Radiology. Between May and October 2016, 59 patients (median age 60 yrs; 21% male) had scans in Radiology, and 78 patients (median age 59yrs; 35% male) had scans in Rheumatology clinic. There was no significant difference in scanned areas amongst the three cohorts with the most common overall being hand/wrist area (n=57, 54 and 61 respectively; total 84%), followed by foot/ankle (n=6, 4 and 4 respectively; total 7%). Between the two time periods, there was an increased trend in final working diagnoses of inflammatory arthritis (28 [41%] vs 36 [61%] and 39 [50%] in the 3 cohorts respectively); and a decreasing trend in the final working diagnoses of non-inflammatory conditions (OA, FM, other non-inflammatory pain: 36 [53%] vs 22 [37.3%] and 28 [35.9%] in the 3 cohorts respectively).

Conclusion: The availability of Rheumatology US was associated with increased propensity for scanning older patients and a greater proportion of men compared to previously, a qualitative improvement as synovitis diagnosis could be delayed in these groups. The introduction of Rheumatology US was also associated with a trend towards higher proportion of inflammatory diagnoses, suggesting potentially increased appropriate clinical use due to availability in-clinic. This is supported by the majority being hand/wrist scans, suggesting Rheumatology use is mainly aimed at diagnosing synovitis. Although there was a modest reduction of 13% in Radiology referrals between the two time periods, there was an overall increase of scans performed by 101% following introduction of the Rheumatology US service. We therefore recommend Rheumatology in-clinic US provision, as in addition to obvious improvement in time to diagnosis, it is likely to increase the range of patients able to access US eg older patients and men, and also likely to increase the pick-up rate of synovitis by improving patient selection.

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AB1188 AUDIT: IMPACT OF MUSCULOSKELETAL ULTRASOUND USE IN RHEUMATOLOGY CLINICS

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Background: Musculoskeletal ultrasound (MSUS) has assumed a prominent role in rheumatological practice as both a diagnostic and monitoring tool.¹ It has utility in excluding and quantifying active synovitis and can be used to guide adjustments of therapies.^{2,3}

Objectives: We aimed to observe impacts on clinical practice of utilising ultrasound (US) scanners in outpatient clinics in a district general rheumatology service. We were particularly interested to see if this affected treatment choices, follow-up plans and referrals for radiological investigations.

Methods: US scanners were obtained and used by 2 rheumatology consultants with previous ultrasound training. Scanning was performed during standard 20 minute appointments within general rheumatology outpatient clinics. No extra time was allocated. Over 8 weeks, we completed questionnaires for each scan and assessed the impact on management decisions.

Results: Over 8 weeks, data was collected for 36 consecutive patients scanned. Commonly imaged joints were hands (81%, n=29), wrists (75%, n=27), feet (19%, n=7), and ankles (14%, n=5).

Most common patient diagnoses were osteoarthritis (n=13, 36%), rheumatoid arthritis (n=10, 28%) and psoriatic arthropathy (n=6, 17%). The remaining patients had diagnostic labels including undifferentiated inflammatory arthritis or no formal diagnosis. Abnormalities suggesting active

inflammation were seen in 42%. In 33% osteoarthritic changes were observed, erosions were seen in 5%. 20% scans were normal.

US altered the management in 58% (n=21/36) of cases. These alterations to management included: drug added (n=5), drug stopped (n=3), dose increase (n=1), joint injection (n=3), intramuscular injection (n=2). Of the medications added, 3 were DMARDs, 1 was a biologic therapy and one case was not specified. The medications stopped were all DMARDs.

US use in clinic prevented radiological investigation in 72% (26/36) of cases. These were radiology ultrasound (n=23) and MRI (n=3). Hands and wrists scans accounted for 86% of these.

US altered the follow up in 56% (20/36) of cases. Of these, 40% (8/20) were reviewed earlier, and 40% (8/20) of patients were discharged based on ultrasound information.

In 16/36 patients, US did not alter management. The average time taken to scan in clinic was 7 minutes per patient. The median time was 5 minutes, with the average skewed due to a few prolonged scans of multiple anatomical areas.

Conclusion: This audit has demonstrated that US use has impacted on our clinical practice. We identified patients to be seen earlier and altered management based on US findings.

US use also prevented radiological investigations in 72% of cases. This has positive impacts on staffing, finances, radiology department capacity and patient convenience. Furthermore, we were able to discharge 40% of patients who otherwise would have been recalled.

Overall, we believe this audit shows positive impacts of MSUS on patient care. Challenges include time pressures of scanning in clinic, time and cost implications of ultrasound training and the need to standardise and record ultrasound methods and findings consistently. Costs are offset by savings to radiology resources and increased discharges. We plan to expand ultrasound usage and train our colleagues to employ ultrasound for our patients.

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AB1189 THE IMPORTANCE OF POSITRON EMISSION TOMOGRAPHY-COMPUTED TOMOGRAPHY (PET-CT) IN FEVER OF UNKNOWN ORIGIN (FUO) AND INFLAMMATION OF UNKNOWN ORIGIN (IUO)

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Background: Fever of unknown origin (FUO) and inflammation of unknown origin (IUO) are rare clinical problems but diagnostically challenging for clinicians. Patients are exposed to extensive and expensive medical examinations for the identification of the FUO/IUO. FDG PET-CT can help to identify the underlying disease in these patients.

Objectives: The aim of this study was to evaluate the role of PET-CT in patients with FUO/IUO and to identify FDG uptake sites and patterns

Methods: Total of 286 patients who were performed 18F FDG-PET-CT between Jan 2014 and Dec 2017 were evaluated, retrospectively. There were a total 62 patients scanned by PET-CT for FUO/IUO. Definitive diagnosis, PET-CT patterns, organ involvement and SUVmax values in these patients were reevaluated

Results: Rheumatic disease in 27 patients (43.5%), 20 malignancy (32.3%) and 6 infectious diseases (9.7%) were diagnosed in the FUO/IUO patients performed PET-CT scan. Systemic vasculitis were the most frequently diagnosed rheumatic disease. 11 patients of the 62 patients (17.7%) were diagnosed large vessel vasculitis (9 Takayasu arteritis, 2