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### OPTIMIZING MRI LIVER CONTRAST FLOW RATE FOR PATIENT COMFORT AND IMAGE QUALITY: LESS IS MORE

Stanislaw Mitew<sup>1</sup>, Madhavan S<sup>1</sup>, Tan I<sup>1</sup>, Yang YX<sup>1</sup>, Quek J<sup>1</sup>, Tan MO<sup>1</sup>

<sup>1</sup>Department of Diagnostic Radiology, Sengkang General Hospital, 110 Sengkang E Wy, Singapore 544886

#### ABSTRACT

##### Background

Patient comfort and a positive scan experience are increasingly recognized as vital components of high-quality patient care. MRI Liver with Primovist is a key diagnostic tool for characterizing hepatic lesions. This project explores whether a reduced contrast injection rate (1 ml/s) could improve patient comfort without sacrificing image quality, particularly during the arterial phase.

##### Methodology

Eighteen patients receiving MRI liver scans with Primovist at SKH were split into 1ml/min (test) and 2ml/min (control) flow rate groups randomly before proceeding for their scans. Representative images of the liver hilum were acquired and anonymized. A group of six trained body consultants at SKH then compared pairs of the images (1mL/min vs 2mL/min) performed on the same day and scored them the scan quality using a Likert scale of 1 to 5 (lowest is best).

##### Results

There is no statistical difference in overall image quality with the mean votes for 1 mL/min being 2.65 while that for 2 mL/min being 2.63 ( $p = 0.448$ , t-test with Mann-Whitney correction). There was also no significant difference between the cohorts when consultants were asked to pick which overall protocol was better or if samples were equivalent ( $p = 0.9836$ , ANOVA with Kruskal-Wallis correction).

##### Conclusion

This small proof-of-concept study shows that 1 mL/min Primovist injection is non-inferior in scan quality while improving patient comfort compared to the current widely used protocol of 2 mL/min in a small cohort of nine patients receiving routine MRI Liver in a regional hospital in Singapore.

**Keywords:** Primovist, Contrast Flow Rate, Image Quality

# RENAL CORTICAL STIFFNESS MEASURED WITH SHEAR WAVE ELASTOGRAPHY (SWE) ULTRASOUND AMONG PATIENTS WITH NORMAL RENAL PROFILE, ACUTE KIDNEY INJURY AND CHRONIC KIDNEY INJURY

Wei Lee, NG<sup>1,3</sup>, Noor Khairiah A. KARIM<sup>1,2</sup>

<sup>1</sup>Department of Radiology, Hospital Pakar Universiti Sains Malaysia, Universiti Sains Malaysia, Kelantan, Malaysia.

<sup>2</sup>Imaging Unit, Advanced Medical and Dental Institute, Universiti Sains Malaysia, 13200 Kepala Batas, Pulau Pinang, Malaysia.

<sup>3</sup>Department of Radiology, Hospital Raja Permaisuri Bainun, 30450 Ipoh, Perak, Malaysia.

## ABSTRACT

### Background

Chronic kidney disease (CKD) is a growing health concern with high prevalence in Malaysia. The progression of CKD involves renal fibrosis, which leads to permanent damage. The gold standard diagnostic investigation is renal biopsy, an invasive method. While MRI is a non-invasive alternative, it has limited accessibility with higher cost. Shear Wave Elastography (SWE), a non-invasive ultrasound technique, shows high potential in detecting renal stiffness which could correlate with CKD severity.

### Methodology

This was a single centred, cross-sectional prospective study which included a total of 202 samples. The samples were categorized into normal renal function, acute kidney injury and chronic kidney disease accordingly. Renal profile (eGFR) was obtained and the renal cortical stiffness was measured with SWE. Statistical analyses were made by comparing means of different variables as well as correlation between variables.

### Results

Statistical analyses showed that there were significant differences between mean SWE and renal functions, and a strong negative correlation was identified between SWE and eGFR ( $p < 0.05$ ).

### Conclusion

There was a significant negative correlation between renal cortical stiffness and kidney function. Future research with larger samples and histopathological validation is recommended.

**Keywords:** ultrasonography, shear wave elastography, renal cortical stiffness

# COMPARISON OF ATTENUATION PARAMETER AND LIVER STIFFNESS MEASUREMENT BETWEEN HEPATUS AND FIBROSCAN IN PATIENTS WITH CHRONIC LIVER DISEASE: A PROSPECTIVE STUDY.

Lim CE<sup>1</sup>, Sinnanaidu RP<sup>2</sup>, Ng XT<sup>1</sup>, Teh JY<sup>2</sup>, Anushya V<sup>1</sup>, Chan WK<sup>2</sup>

<sup>1</sup>*Department of Biomedical Imaging, Faculty of Medicine, Universiti Malaya, Malaysia.*

<sup>2</sup>*Gastroenterology and Hepatology Unit, Department of Medicine, Faculty of Medicine, Universiti Malaya, Malaysia.*

## ABSTRACT

### Background

We compared controlled attenuation parameter (CAP) and liver stiffness measurement (LSM) using Hepatus (HP) and Fibroscan (FS). Additionally, we evaluated intra- and inter-observer variability and compared examination times.

### Methodology

HP and FS examinations were performed on patients with chronic liver disease by two operators, twice on each patient, at two different time points, independent of each other.

### Results

The data for 158 patients with 1264 examinations was analyzed. There was moderate correlation between HP and FS for CAP (Spearman's rho 0.67,  $p < 0.001$ ) and strong correlation for LSM (Spearman's rho 0.74,  $p < 0.001$ ). The mean difference (95% confidence interval) between CAP obtained by HP and FS was 15(-69 to 99) dB/m, and for LSM was 1.2(-5.0 to 7.2) kPa. Substantial agreement between HP and FS when using 10kPa and 15kPa LSM cut-offs, moderate agreement when using 20kPa, 248dB/m and 268dB/m cut-offs, and fair agreement when using 280dB/m. The IQR for CAP and IQR/median for LSM were lower for HP compared with FS (12 vs 33dB/m,  $p < 0.001$ , and 13 vs 14,  $p < 0.001$ ). The intra- and inter-observer reliability using HP and FS were good to excellent with intraclass correlation coefficients of 0.86–0.97. HP had shorter examination time (43s vs 62s,  $p < 0.001$ ) and less invalid measurements (0 vs 1,  $p < 0.001$ ).

### Conclusion

Measurements obtained with HP and FS are moderate to strongly correlated, but differs in their absolute values, consistency, and examination time. However, the differences do not appear clinically significant. Either device can be used by trained healthcare personnel.

**Keywords:** Hepatus, Fibroscan, Attenuation Parameter, Liver Stiffness Measurement

# EXTRAOSSEOUS EWING SARCOMA OF THE COLON AS A SECONDARY MALIGNANCY POST-LYMPHOMA: DIAGNOSTIC IMAGING CHALLENGES

Nurul Nabila M<sup>1</sup>, Lim Yi Ting<sup>1</sup>

<sup>1</sup>*Biomedical Imaging Pusat Perubatan Universiti Malaya,*

## ABSTRACT

Secondary malignancies in lymphoma survivors are well-documented, but extraosseous Ewing sarcoma (EES) of the gastrointestinal tract is exceedingly rare. We report a case of a young adult with history of B-cell non-Hodgkin's lymphoma (B-NHL), stage 4 which was diagnosed with extraosseous Ewing sarcoma of the gastrointestinal tract involving the transverse colon. He presented 16 years after treatment of B-NHL. He was treated previously for B-NHL with BFM NHL 2004 protocol for 5 cycles followed by autologous stem cell transplant. This 21-year-old boy initially presented with abdominal pain and discomfort for 4 months. Initial imaging via ultrasound showed heterogenous solid mass. Computed tomographic examination of the abdomen shows a soft tissue mass arising from transverse colon measuring approximately 14.1cm in size. Ultrasound guided biopsy of this abdominal mass shows tumour cells with features of neuroectodermal origin. Further testing with NKX 2.2 gene to target EWS-FLI-1 shows diffuse positive. Based on this patient was diagnosed as having extraosseous Ewing sarcoma of the gastrointestinal tract. He was planned for 14 cycles of VDC/IE (vincristine, doxorubicin, cyclophosphamide, and ifosfamide etoposide). Underwent right hemicolectomy and en block resection of mesenteric Ewing Sarcoma after good response to 9 cycles of chemotherapy. This case highlights EES as a diagnostic mimic of lymphoma relapse and emphasizes the role of histologic confirmation in post-cancer masses. We discuss imaging clues and mechanisms of secondary Ewing sarcoma in lymphoma survivors.

**Keywords:** Extraosseous Ewing's Sarcoma (EES), secondary cancer, lymphoma

# **DIVERSE PRESENTATIONS OF ECTOPIC PREGNANCY: A PICTORIAL MRI REVIEW FROM OUR INSTITUTIONAL EXPERIENCE**

Dharshine R<sup>1</sup>, Nyazirah AW<sup>1</sup>

*<sup>1</sup>Department of Radiology, Hospital Sultan Ismail Johor Bahru, Malaysia*

## **ABSTRACT**

Ectopic pregnancy (EP) is the leading cause of pregnancy-related mortality during the first trimester. It can occur at various implantation sites, resulting in different types such as tubal, interstitial, cervical, ovarian, cesarean scar, and abdominal pregnancies. The prevalence of EP has increased due to rising cesarean section rates and the growing use of assisted reproductive technologies. Diagnosis typically involves clinical evaluation, laboratory testing, and ultrasonography. However, when ultrasound findings are inconclusive, magnetic resonance imaging (MRI) is increasingly utilized for its superior soft-tissue contrast and wide field of view. MRI can accurately identify the implantation site, which is crucial for guiding appropriate management—whether through conservative monitoring, surgical intervention (open or laparoscopic), or medical therapy (systemic or local). This pictorial review presents our institution's experience with the diverse presentations of ectopic pregnancy. Key MRI sequences and their diagnostic features are highlighted to support accurate diagnosis and informed treatment planning.

**Keywords:** ectopic pregnancy, magnetic resonance imaging, ultrasonography

# SALPINGORECTAL FISTULA: A RARE COMPLICATION OF PELVIC INFLAMMATORY DISEASE IN A WOMAN WITH TUBERCULOSIS

ZY, Tan<sup>1</sup>, Emilia, MR<sup>1</sup>

*<sup>1</sup>Department of Radiology, Universiti Kebangsaan Malaysia (UKM), Jalan Yaacob Latif Kuala Lumpur, Bandar Tun Razak, 56000 Cheras, Wilayah Persekutuan Kuala Lumpur, Malaysia.*

## ABSTRACT

Pelvic inflammatory disease (PID) is a disease of the upper female genital tract; causes include inflammation, obstruction, and malignancy. In chronic inflammation, rare complications can arise including fistulation to surrounding organs. An asymptomatic lady underwent routine hysterosalpingography for subfertility workup, bilateral hydrosalpinx was noted requiring diagnostic laparoscopy, which revealed omental and perihepatic adhesions with a complex right tubo-ovarian cyst. Right salpingectomy and cyst drainage was performed, complicated with anterior rectal wall perforation requiring diversion sigmoid colostomy. HPE showed extensive necrotizing granulomatous inflammation with negative Ziehl-Neelsen stain. Tuberculosis PCR was positive. She was diagnosed with disseminated tuberculosis and started on anti-TB regimen. In subsequent workup for stoma reversal, distal loopogram with complementary CT and hysterosalpingography revealed abnormal communication from the left fallopian tube to the rectum, consistent with salpingorectal fistula, requiring surgical excision. Complications from chronic PID should be anticipated and correct imaging is key to diagnose complications such as fistulation.

**Keywords:** pelvic inflammatory disease, salpingorectal fistula, hysterosalpingography, subfertility, tuberculosis

## A MISSED CASE OF TWISTED OVARIAN CYST WITH UNUSUAL PRESENTATION

Mohd AS<sup>1</sup>., Eishaque MR<sup>1</sup>.

*<sup>1</sup>Radiology Department, Hospital Tanjong Karang, KM8, Jalan Sungai Terap 5, 45500 Tanjong Karang, Selangor*

### ABSTRACT

Ovarian cyst torsion, though rare in young women, can cause significant clinical complications if not promptly diagnosed. A 27-year-old unmarried woman presented with umbilical pain, vomiting, and loose stools of one-day duration. Physical examination revealed a vague, non-tender central abdominal mass measuring 20x20 cm, with no guarding. Blood tests showed elevated WBC (17.01) and CRP (22.96), while tumor markers were within normal limits. An initial diagnosis of a mesenteric cyst was considered. Following admission, the patient's symptoms temporarily improved with analgesics and antibiotics. However, a contrast-enhanced CT scan revealed a large cystic mass in the right iliac fossa, suggestive of either a bowel or ovarian origin. Exploratory laparotomy revealed hemorrhagic ascites and a twisted, non-viable right ovarian cyst (18x13 cm), along with a distended fallopian tube. A right salpingo-oophorectomy and appendectomy were performed. The case highlights that delayed diagnosis of ovarian torsion can lead to ovarian infarction and necrosis of ovary.

**Keywords :** twisted ovarian cyst, missed, unusual

## SWYER SYNDROME - A CASE REPORT

Anna Fitriana AR<sup>1</sup>, Calvin O<sup>2</sup>, Sheron A<sup>3</sup>

<sup>1</sup> Department of Radiology, Hospital Umum Sarawak, Kuching, Sarawak, Malaysia

<sup>2</sup> Department of Radiology, Hospital Sarikei, Sarawak, Malaysia

<sup>3</sup> Department of Obstetrics and Gynaecology, Hospital Sarikei, Sarawak, Malaysia

### ABSTRACT

Swyer syndrome or pure 46, XY gonadal dysgenesis is classically described as female phenotype with unambiguous female genital appearance. Patients have underdeveloped uterus, fallopian tubes and bilateral rudimentary streak gonads. It typically presents as primary amenorrhoea due to no hormonal or reproductive potential of the gonads. The current practice is to proceed with gonadectomy in view of high incidence of tumours such as gonadoblastoma and germ cell malignancies. 18 years old, sexually naive presented with primary amenorrhea. She was phenotypically female with underdeveloped breasts and pubic hair growth (Tanner stage II). No family history of amenorrhea. Blood investigations revealed hypergonadotropic-hypogonadism with high levels of follicular stimulating hormone, serum luteinizing hormone and low testosterone. MRI demonstrated a rudimentary uterus with poor junctional zone and possible streak gonads. Karyotyping revealed 46-XY karyotype favouring complete gonadal dysgenesis/Swyer syndrome. She underwent successful laparoscopic gonadectomy with histologically confirmed bilateral streak gonads.

**Keywords:** Swyer syndrome, gonadal dysgenesis



# AN UNEXPECTED DIAGNOSIS: A RARE CASE OF RETROPERITONEAL LEIOMYOMA

Mohd Syafiq, Y<sup>1</sup>, Faizal Firdaus K<sup>2</sup>

*<sup>1</sup>Department of Radiology, KPJ Ampang Puteri Specialist Hospital, Jalan Memanda 9, Taman Dato Ahmad Razali, 68000, Ampang, Selangor, Malaysia.*

## ABSTRACT

Retroperitoneal leiomyomas are exceptionally rare benign smooth muscle tumors, with fewer than 150 cases reported in the literature to date. They occur outside the uterus and can mimic a range of pelvic or retroperitoneal pathologies, posing significant diagnostic challenges. We report the case of a 34-year-old nulliparous woman who presented with dysmenorrhea and dysuria. Initial transabdominal ultrasound revealed bilateral ovarian cysts with a normal uterus. She was scheduled for elective laparoscopic cystectomy; however, intraoperative findings revealed an unexpected retroperitoneal mass. The procedure was withheld at that point to allow for further imaging evaluation prior to intervention. MRI demonstrated a solid, enhancing mass in the rectouterine pouch with low signal intensity on both T1 and T2-weighted images and homogeneous enhancement post-contrast, suspicious for a retroperitoneal GIST or other soft tissue tumor. A second laparoscopic procedure was performed, and the mass was completely excised. Histopathology confirmed a benign retroperitoneal leiomyoma. The patient had an uneventful postoperative course and was discharged well. This case highlights the importance of including retroperitoneal leiomyomas in the differential diagnosis of retroperitoneal masses, particularly when radiological findings suggest a well-encapsulated solid lesion.

**Keywords:** Retroperitoneal leiomyoma, retroperitoneal tumor, pelvic mass, smooth muscle tumor

## FROM COTTON TO COMPLICATION: A CASE OF GOSSYPIBOMA

Nur RS.<sup>1</sup>, Mohd AAH<sup>2</sup>, Hayati MM<sup>1</sup>.

<sup>1</sup>Department of Radiology, Hospital Pakar Universiti Sains Malaysia, Kubang Kerian Kelantan, Malaysia.

<sup>2</sup>Department of Radiology, Hospital Duchess of Kent, Sandakan, Sabah, Malaysia.

### ABSTRACT

Gossypiboma, also known as textiloma or cottonoid, refers to a retained surgical sponge or gauze left within the body postoperatively. Though rare, it poses significant diagnostic challenges and may lead to serious complications. We report a case involving a 54-year-old woman with a history of lower segment caesarean section in 1994, who presented with intermittent lower abdominal discomfort and progressive abdominal distension over 20 years. Contrast-enhanced CT of the abdomen revealed a well-defined, heterogeneously enhancing mass in the left lower quadrant, with central hypodensity, peripheral calcifications, and serpiginous hyperdense material suggesting gossypiboma. A calcified adnexal teratoma was considered as a differential diagnosis. Exploratory laparotomy revealed a  $9.0 \times 11.4 \times 12.4$  cm cystic mass adherent to bowel and omentum. On incision, a retained surgical gauze was discovered within haemorrhagic necrotic tissue. The patient's postoperative course was uneventful. This case highlights the importance of prevention through meticulous surgical counts and sponge-tracking systems to enhance patient safety.

**Keywords:** Gossypiboma, Textiloma, Retained Gauze