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RELIABILITY OF DYNAMIC CONTRAST ENHANCED MRI IN DIAGNOSIS OF HEPATIC TUMORS WITH PATHOLOGIC CORRELATION

By

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ABSTRACT

Background: In recent decades, it is clear than any previous era that the morbidity and mortality is increasing in patients with liver tumors. This is either due to liver cirrhosis or metastatic secondaries from distant malignant tumors. With advanced development of diagnostic tools, it becomes more available to detect early the prevalence of such tumors and distinguish benign from malignant to modify the wellbeing and healthcare of many patients.

Objective: The study was carried out to evaluate reliability of dynamic contrast enhanced MRI in diagnosis of hepatic tumors with pathologic correlation to achieve high accuracy diagnostic confirmation prior to the targeted treatment.

Patients and Methods: Forty patients were included, 25 males and 15 females. The age of the patients ranged from 26 to 77 years old and one patient was five months, with mean age ± S.D. "50.86 ± 15.46". They were referred from Tropical, General Medicine, General Surgery Departments as well as out-patient clinics to Radiology Department, New Damietta, Al-Azhar University Hospital during the period from August, 2011 to December, 2012. The patients underwent laboratory investigations and ultrasonography as a screening survey and then subjected to full MRI study including pre contrast imaging (T1 and T2 sequence), dual-echo (in and out) phase, diffusion-weighted images, heavy T2 and dynamic study. Histopathological study was done as confirmatory for the diagnosis. All examinations were done after obtaining informed consent, and parent's consent was obtained for the infant aged 5 months.

Results: The study showed that the common hepatic tumor was HCC { solitary lesions (8 cases, 20%) and multicentric HCCs (6 cases, 15%)} followed by metastasis (8 cases, 20%), hemangioma (7 cases, 17.5%), dysplastic nodules (3 cases, 7.5%), cholangiocarcinoma and focal nodular hyperplasia (2 cases for each, 5%), hepatoblastoma, adenoma, regenerative nodule and benign lesions (1 case for each, 2.5%). Thirty three cases (82.5%) were prepared for histopathological correlation; The remaining 7 cases (17.5%) were excluded for biopsy which were diagnosed by MRI as hemangiomas and underwent follow up.

Conclusion: Magnetic resonance imaging has the advantage of achieving high resolution images of the liver without the use of ionizing radiation in diagnosis of liver tumors, and pathological study considered a mandatory final diagnostic tool for the conflict cases.

INTRODUCTION

The greatest range of benign and malignant disease affects the liver. As a result, much researches and many tools developed for a variety of imaging modalities geared toward improvement of visualization of liver diseases **(Richard et al., 2011).** Benign liver masses may be found in more than 20% of the general

population **(Amital et al., 2008).** Benign hepatic lesions include hepatic cysts, hemangiomas, adenomas, and focal nodular hyperplasias **(Devaki et al., 2012).**

Malignant hepatic lesions are either primary or secondary. Primary lesions include regenerative, dysplastic nodules, hepatocellular carcinoma, fibrolamellar hepatocellular carcinoma and cholangio-carcinoma, while secondary lesions include hypovascular, hypervascular and hemorrhagic lesions **(Vilgrain et al., 2005).** Hepatocellular carcinoma (HCC) is the most common primary malignant tumor of the liver due to excessive alcohol intake, chronic hepatitis or primary biliary cirrhosis**.** Imaging plays a central role in the management of hepatocellular carcinoma including screening popula-tions at risk, confirming the diagnosis, planning treatment, guiding therapy, and follow up after treatment **(Peterson and Baron, 2007).**

MR imaging is establishing a role as a primary diagnostic technique with increasing evidence showing MR imaging to have advantages over CT regarding diagnostic sensitivity and specificity for many pathologies of solid organs, bile and pancreatic ducts, bowel, peritoneum, and retroperitoneum. In addition, there are increasing concerns regarding the risks of radiation and iodinated contrast associated with CT imaging of the abdomen **(Diego et al., 2010 and Saima et al., 2011).** MRI has many advantages, e.g. high contrast resolution, multiplaner images, lack of ionizing radiation, and the safety of using particulate contrast media rather than those containing iodine. Lesions morphology, signal intensity, and contrast enhancement pattern are taken into consideration when characterizing masses with MRI **(Demir *et al*., 2009).** It leads to significantly better detection of hepatic focal lesions following improvements in technology and techniques **(Arguedas, 2007).**

The aim of this study was to evaluate the reliability of dynamic contrast enhanced MRI in diagnosis of hepatic tumors with histopathologic correlation.

PATIENTS AND METHODS

Patients: This research was performed at Radiology Department, (New Damietta), Al-Azhar University Hospital during the period from August, 2011 to December, 2012. The study included 40 patients; 25 males and 15 females. The age of the patients ranged from 26 to 77 years old and one patient was five months, with mean age ± S.D. "50.86 ± 15.46". They were referred from Tropical, General Medicine, General Surgery Departments as well as out-patient clinics after obtaining informed consent, and parent's consent was obtained for the infant aged 5 months.

Methods: All patients were subjected to the following:

A) History taking including personal history, age, sex, occupation and special habits of medical importance as well as viral hepatitis, alcoholism and use of oral contraceptives in female patient.

B) Patient complaints: Right hypochondrial pain, fever and jaundice.

C) Malignant symptoms: Weight loss, anorexia, cachexia, fever and gastrointestinal symptoms.

Clinical examination: General and local examinations.

Laboratory investigations:

A) CBC, serum creatinine, HBSAg and HCV.

B) Liver function tests.

C) Serum alkaline phosphatase.

D)Tumor markers: Alpha fetoprotein and carcino-embryonic antigen.

- ***Ultrasound examination for the abdomen*** using Ultrasonix, SP, with convex probe 2-5 MHz as a screening examination.
- ***Dynamic MRI of the liver*** using Philips, achiva-1.5 T-XR-Netherlands, 2010.

Technical Considerations for dynamic MRI of the liver scanning protocol:

A) Pre contrast imaging included:

- T_1 weighted (T_1W) gradient echo sequence (GRE) with and without fat suppression (FS): TR=100-200ms, TE ≤8ms, number of excitations (NEX) 1-4, matrix 128-256x256, slice thickness 5mm and slice gap 0-2 mm, flip angle =90.
- T_2 weighted (T_2W) images (fast spin echo sequence) with and without fat suppression (FS): repetition time (TR) 2000ms, echo time (TE) = 90-120 ms, number of excitations (NEX) 1-4, matrix 192-256x256 with a field of view as small as possible, slice thickness 5mm, slice gap 0-2mm, flip angle =90.

B) Dual-echo (in and out) phase: Using the shortest possible out-of-phase and in-phase echo times assured the best quality images, with better signal and fewer susceptibility artifacts.

- In and out phase: TR=99ms in both in and out phases, TE =4.6ms in in-phase WI and 2.3ms in out-phase WI, flip angle = 80 in both in and out phases.

C) Diffusion weighted image: We used breath-hold single-shot SE echo-planar imaging of the liver.

D) Heavy T2: MRI offered the additional benefit of T2-weighted imaging, in which heavy T2-weighted imaging with an echo time >112 ms was generally used to differentiate hepatic hemangiomas from malignant lesions, as the former retained their higher signal on this sequence (TR: 8000 msec, TE: 200 msec, flip angle: 90)

E) Dynamic study: Dynamic study was done using T1W GRE sequence by administration of bolus injection of 0.1mmol/kg of gadolinium chelates at a rate of 2ml/s {arterial phase (16-20 sec.), portovenous phase (45-60 sec.) and delayed equilibrium phase (3-5 min.)} followed immediately by administration of 20ml of sterile 0.9% saline solution from the antecubital vein using pump injector.

MRI pulse sequence parameters were collected in table (1).

Table (1): MRI pulse sequence parameters.

MRI Pulse sequences / Parameters	T1WI	T2WI	In phase	Out phase	DWI	Dynamic T1WIs
Repetition time	100-200 msec	≥2000 msec	99 msec	99 msec	1600-2000	140 msec
Echo time	≤8ms msec	90-120 msec	4.6ms	2.3ms	70	5 msec
Matrix	128-256x256	192-256x256	128-256x256	128-256x256	144 X 192	128-256x256
Field of view	380 mm	300 mm	380mm	380mm	300mm	380 mm
Slice thickness	5-7 mm	5-7 mm	5-7 mm	5-7 mm	7-8	5-7 mm
Inter-slice gap	0-2mm	0-2mm	0-2mm	0-2mm	0-2mm	1 mm
Acquisition time	4	4	4	4	23	0.15
Flip angle	90	90	80	80	80	90

Histopathological study was done as confirmatory for the diagnosis.

Statistical analysis of data: The collected data were organized, tabulated and statistically analyzed using statistical package for social science (SPSS) version 19 (SPSS Inc, Chicago, USA), running on IBM compatible computer with Microsoft Windows 7 operating System. Mean, standard deviation, frequency and percentage were used as descriptive. Chi square test (X^2) was used for testing significance of observed differences between studied patients. The level of significance was adopted at $p< 0.05$. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy were used as measurements of validity for MRI regarding to histopathology.

RESULTS

Forty patients were included in this study; 25 patients (62.5%) were males and 15 patients (37.5%) were females .

The most common age incidence for hepatic tumors was in the seventh decade of life (15 cases; 37.5%), followed by the fifth decade (11cases; 27.5%), sixth decade (6 cases; 15%), forth decade (5 cases, 12.5 %), third decade (2 cases each; 5%) and one patient was 5 months (2.5%) (Table 2).

Table (2): Distribution of the studied cases regarding to age.

Age	*Number of cases*
5 months	**1 (***case***)**
26-30 years	**2** ***(cases)***
31-40 years	**5 (***cases***)**
41-50 years	**11(** *cases***)**
51-60 years	**6** ***(cases)***
60-70 years	**15 *(cases)***
Mean age ± SD	**50.86 ± 15.46**

Regarding MRI presentations, there were 24 cases presented by liver cirrhosis, 4 cases presented by portal vein thrombosis, 24 cases presented by hepatitis, 2 cases presented by intra hepatic biliary radicles dilatation, 16 cases presented by enlarged spleen, 4 cases presented by ascites (Table 3).

Table (3): Distribution of the studied cases regarding to MRI presentation.

History		No	%
Liver cirrhosis	**+ve**	**24**	**60 %**
	-ve	**16**	**40 %**
Portal vein thrombosis	**+ve**	**4**	**10 %**
	-ve	**36**	**90 %**
Hepatitis	**HBV**	**1**	**2.5%**
	HCV	**23**	**57.5%**
	Negative	**16**	**40 %**
Intra hepatic biliary radicles dilatation	**+ve**	**2**	**5 %**
	-ve	**38**	**95 %**
Spleen	**Removed**	**2**	**5 %**
	Enlarged	**16**	**40 %**
	Average size (normal)	**22**	**55 %**
Ascites	**+ve**	**4**	**10 %**
	-ve	**36**	**90 %**
Total		**40**	**100 %**

In our study, sixteen cases (40%) were presented by multiple hepatic focal lesions, 24 cases (60%) presented by solitary hepatic focal lesions, three cases (7.5%) presented by lymph node enlargement, two cases (5%) presented by lung metastases and one case (2.5%) presented by bone metastases (Table 4).

Table (4): Distribution of the studied cases regarding to focal, multiplicity, lymph nodes and metastases.

Variables		No	%
Number of hepatic focal lesions	**Multiple**	**16**	**40.0%**
	Single	**24**	**60.0%**
Lymph nodes	**+ve**	**3**	**7.5%**
	-ve	**37**	**92.5%**
Lung metastases	**+ve**	**2**	**5.0%**
	-ve	**38**	**95.0%**
Bone metastases	**+ve**	**1**	**2.5%**
	-ve	**39**	**97.5%**
Total		**40**	**100.0%**

Regarding MRI findings in diagnosis of hepatic focal lesions, the common hepatic tumor was HCC {solitary lesions (8 cases 20%) and multicentric HCCs (6 cases 15%)} followed by metastasis (8 cases 20%), hemangioma (7 cases 17.5%), dysplastic nodules (3cases 7.5%), cholangiocarcinoma and focal nodular hyperplasia (2 cases for each 5%), followed by hepatoblastoma, adenoma, regenerative nodule and benign lesions (1 case for each 2.5%) (Table 5).

Table (5): Distribution of the studied cases regarding to MRI diagnosis.

Radiology diagnosis	No	%
Solitary HCC	**8**	**20%**
Multicentric HCC	**6**	**15%**
Metastasis	**8**	**20%**
Hemangiomas	**7**	**17.5%**
Dysplastic nodules	**3**	**7.5%**
Cholangiocarcinoma	**2**	**5%**
Focal nodular hyperplasia	**2**	**5%**
Hepatoblastoma	**1**	**2.5%**
Regenerative nodules	**1**	**2.5%**
Adenoma	**1**	**2.5%**
Benign	**1**	**2.5%**
Total	**40**	**100%**

Distribution of the studied cases regarding biopsy, 33 cases (82.5%) were prepared for histopathological correlation. The remaining 7 cases (17.5%) were excluded for biopsy which were diagnosed by MRI as hemangiomas and underwent follow up.

Regarding histopathological results, the common hepatic tumor was HCC {solitary lesions (7 cases 17.5%) and multicentric HCCs (4 cases, 10%)} followed by metastasis (10 cases 25%), followed by dysplastic nodules (3 cases, 7.5%), followed by cholangiocarcinoma and focal nodular hyperplasia and benign lesions (2 cases for each 5%) followed by hepatoblastoma, regenerative nodule and lymphoma (1 case for each 2.5%) (Table 6).

Table (6): Distribution of the studied cases regarding histopathological results.

Histopathology	No	%
Solitary HCC	**7**	**21.21%**
Multicentric HCC	**4**	**12.12 %**
Metastasis	**10**	**30.30 %**
Dysplastic nodules	**3**	**9.10`%**
Cholangiocarcinoma	**2**	**6.06 %**
Focal nodular hyperplasia	**2**	**6.06 %**
Benign	**2**	**6.06 %**
Hepatoblastoma	**1**	**3.03%**
Regenerative nodules	**1**	**3.03%**
Lymphoma	**1**	**3.03%**
Total	**33**	**100 %**

In our study, 24 cases (60 %) were presented by liver cirrhosis; 20 cases (50 %) showed malignant lesions, and 4 cases (10%) showed benign lesions. On the other hand, 16 cases (40%) were presented by non cirrhotic liver; 11 cases (27.5%) showed benign lesions and 5 cases (12.5%) showed malignant lesions (Table 7).

Table (7): Relation of liver cirrhosis in the studied cases to the tumor types.

Tumor types / Liver Cirrhosis	Malignant		Benign		X^{2*}	P
	No	%	No	%		
+ve	20	80.0	4	26.7	11.1	0.001 S
-ve	5	20.0	11	73.3		
Total	25	100.0	15	100.0		

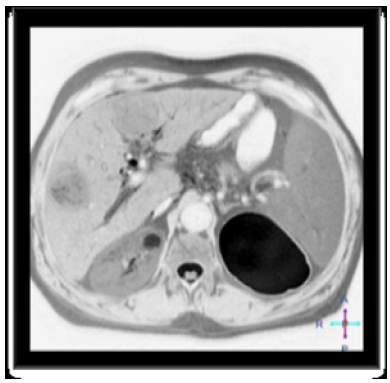
S= significant X^{2*}=chi square value.

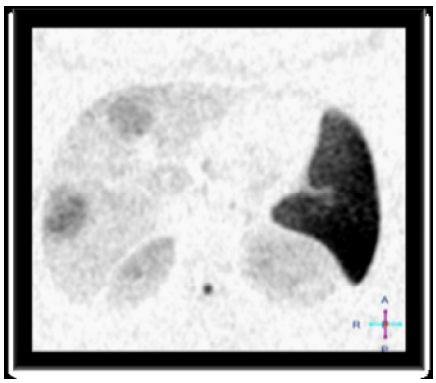
Regarding the correlation of MRI in the diagnosis of hepatic tumors to the histopathological study were tabulated in table (8).

Table (8): Relation of MRI in diagnosis of hepatic tumors to the histopathological results.

Diagnosis / Hepatic tumors	Magnetic resonance	Histopathological results
HCC (Solitary & multicentric)	14 (8 solitary & 6 multicentric)	11 (7 solitary &4 multicentric)
Metastasis	8	10
Hemangioma	7	_
Dysplastic nodule	3	3
Cholangiocarcinoma	2	2
Focal nodular hyperplasia	2	2
Hepatoblastoma	1	1
Adenoma	1	_
Regenerative nodular	1	1
Lymphoma	_	1
Benign	1	2

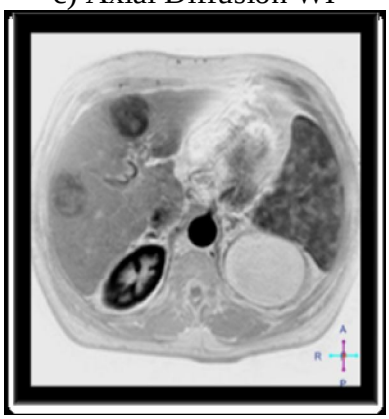

a) Axial T1 WI


b) Axial T2 WI

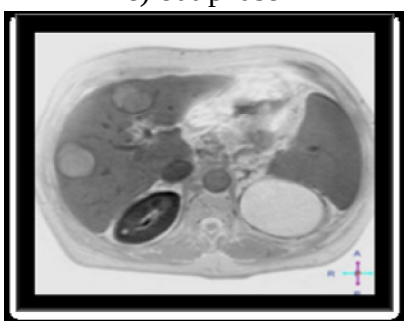

c) Axial Diffusion WI

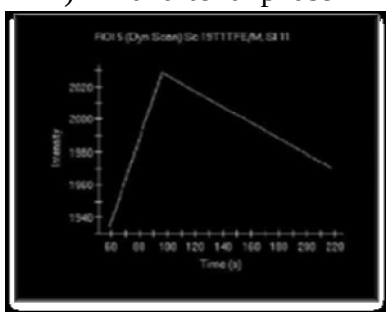

d) in phase


e) out phase


f) Axial arterial phase


g) Axial portal phase


h) Axial delayed phase


i) Time-signal intensity curve

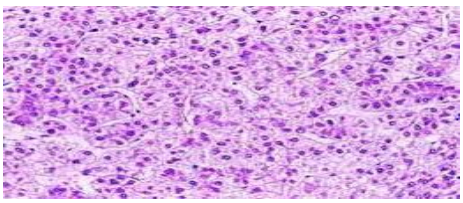
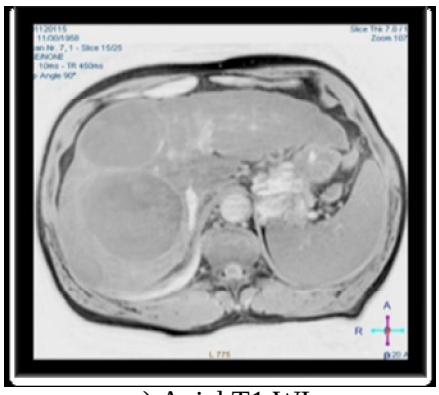
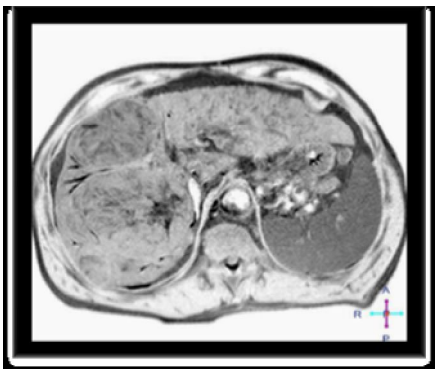

j) Highly diff. HCC

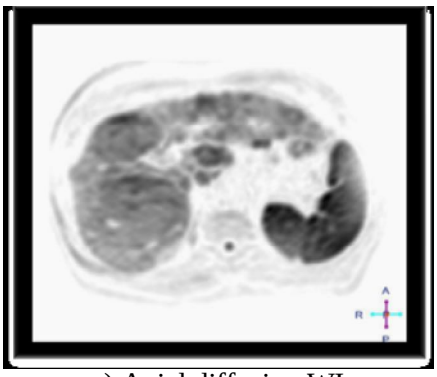
Fig. (1): Male patient, 62 years old was suffering from right hypochondrial pain.

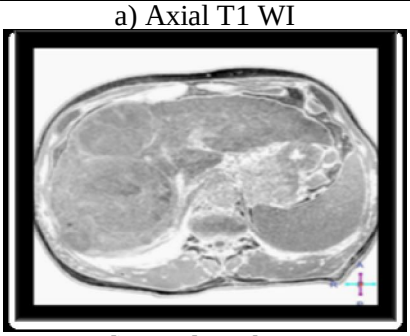
MRI findings of Fig. (1): Liver showed multifocal variable sized lesions, appeared low signal in T1 (a), in-phase (d) and out-phase (e), and high signal in T2 (b) and DWIS (c). In dynamic study (f-h), the lesions revealed near to homogenous enhancement in the arterial phase with rapidly wash out in delayed phase. I) TIC showed rapid wash in phase of hypervascularity of HCC, and rapidly wash-out denoting pathologically microcirculation in the tumor. **Diagnosis:** Hepatocellular carcinoma.

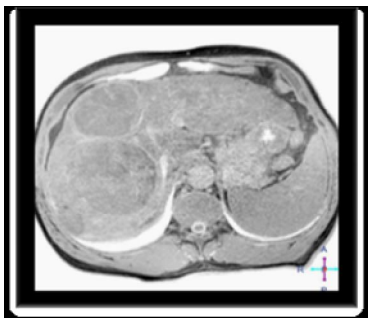
Histopathological diagnosis (j): Highly differentiated hepatocellular carcinoma.

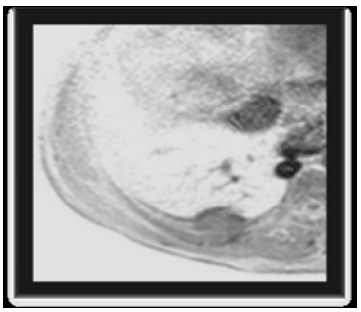

a) Axial T1 WI

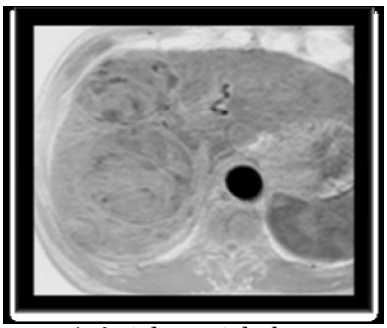

b) Axial T2 WI

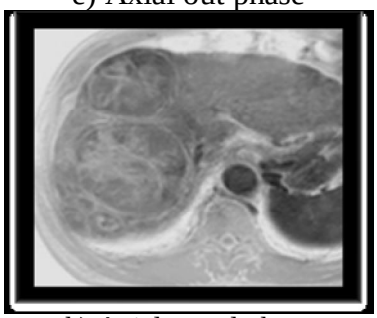

c) Axial diffusion WI

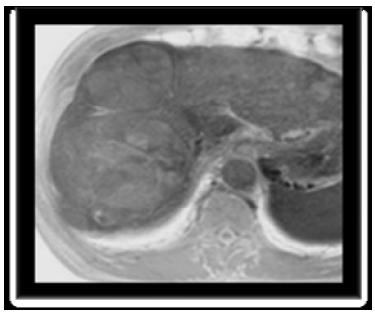

d) Axial in phase

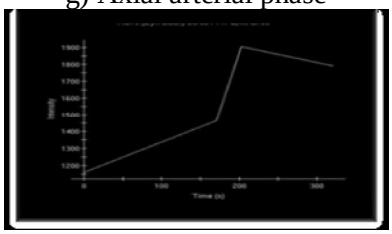

e) Axial out phase


f) Axial T1 post contrast


g) Axial arterial phase


h) Axial portal phase


i) Axial delayed phase


j) Time-signal intensity curve

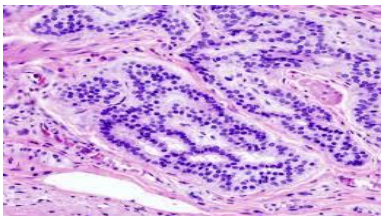

k) H.P; liver Mets from colorectal carcinoma

Fig. (2): Male patient, 62 years old complaining of malaise.

MRI findings of Fig. (2): Liver showed multiple variable sized focal lesions with slight low signal in T2 (b) and DWIs (c). In dynamic study (g-i), the lesions revealed non homogenous early faint enhancement in arterial phase with washout in delayed phases. Right thoracic rib metastasis was noted with enhancement was seen in axial post contrast T1 WI (f). **TIC** showed slow wash in phase of slight increased blood flow until mild part of curve followed by rapid washout phase in later portion, while at mid part curve showed higher peak of pathologically microcirculation of metastases (j).

MRI diagnosis: Metastatic liver and chest wall lesions versus multicenteric hepatocellular carcinoma with chest wall metastasis. **Histopathological diagnosis (k):** Metastatic deposits from colorectal carcinoma.

DISCUSSION

Hepatocellular carcinoma is the most common primary malignant tumor of the liver and often develops in patients with underlying liver cirrhosis due to excessive alcohol intake, chronic hepatitis or primary biliary cirrhosis **(Janine et al., 2012).**

Eleven cases (27.5%) presented by HCC representing the most common primary malignant hepatic tumor. Four of them (10%) presented by multicentric HCC and remaining seven cases (17.5%) presented by solitary HCC. With dynamic gadolinium-enhanced imaging, the lesion enhances in the arterial phase then becomes isointense in the portal phase then becomes hypointense in the delayed phase **(Asmaa et al., 2009).**

The signal intensity of HCC on DW-MRI is variable and appears to depend on its degree of differentiation. About 90% of moderately to poorly differentiated HCCs show intermediate-high signal intensity. Furthermore, hypovascular well-differentiated HCCs appear isointense to the liver parenchyma, but the moderately to poorly differentiated hypovascular HCCs display high signal intensity **(Muhi and Ichikawa, 2011).** In our study, all HCCs (eleven cases) appeared as low signal intensity on T1-weighted images and high signal on T2-weighted images as well as DWI. Dynamic study revealed early contrast enhancement in arterial phase with rapidly wash out in delayed phases.

The most common malignant tumors of the liver are metastases (about 30% of hepatic tumors). Liver metastases usually appear as solitary or multiple lesions. **(Shahid et al., 2009).** In our study, we have reported eight cases (20%) presented by metastatic lesions (5 hypervascular and 3 hypovascular) representing the most common secondary malignant hepatic tumor.

The imaging appearance of metastases depends on the degree of underlying hepatic arterial supply. Hypovascular metastases show decreased enhancement on portal venous phase images. In addition, hypervascular metastases enhance earlier on arterial phase and show washout on delayed images. On diffusion-weighted images, these lesions are hyperintense **(Alvin et al., 2012).** On DW-MR images in both hypervascular and hypovascular metastasis, the non-necrotic component of metastases display high signal intensity re?ecting the cellularity of the solid tumor **(Muhi and Ichikawa, 2011).** In our study, all metastatic lesions showed variable degrees of low signal intensity on T1-weighted images and appeared hyperintense on T2 and DWIs. Dynamic study revealed five of these lesions presented by hypervascular metastases displayed early contrast enhancement on arterial phase and rapidly washout in delayed phases. The remaining three cases that presented by hypovascular metastases displayed slight low signal in T1 as well as in phase and out phase WIs and heterogenous high signal in T2 and DWIs.

Hemangiomas display high signal intensity on DW-MR images, but usually retain their high signal intensity at high b-value (b = 1,000 s/mm2) DW-MRI **(Kele and Jagt, 2012).** In our study, all lesions appear as low signal intensity in T1WI, high signal intensity in T2 and DWIs and markedly hyperintense in heavy T2WI. Dynamic study revealed homogenous uniform contrast enhancement on arterial phase in only one lesion and remaining six lesions revealed peripheral nodular enhancement with centripetal progression in delayed

phases giving closed iris sign. Such cases biopsy was not recommended but follow up of these lesions 6 months later confirmed the diagnosis and revealed stationary course of the disease.

Cholangiocarcinomas represent 10 to 20% of all primary liver malignancies, with an overall incidence rate of 0.95 cases per 100,000 adults. As a result of differences in local risk factors, genetics as well as classification issues, the rate varies markedly around the world from 2 cases per 100,000 to 96 cases per 100,000 **(Christine et al., 2012).** In our study, we have only two cases out of forty cases (5%) presented by cholangiocarcinoma. Cholangiocarcinoma is characterized on MRI as a hypointense lesion on T1-weighted images and a hyperintense lesion on T2-weighted images. In dynamic contrast enhanced MRI, cholangiocarcinoma is usually recognized by delayed moderate peripheral enhancement. Involved bile ducts are identified by irregular ductal narrowing with proximal dilatation **(Boris** and Gregory**., 2010).**

In this study, lesions appeared as slight high signal in T1-WI and near isointense in T2-WI as well as in phase WI and out phase WI and hyperintense in DWI. In dynamic study, the lesion revealed homogenous enhancement in arterial phase with delayed washout in portal and delayed phases. MRCP revealed diffuse intrahepatic biliary dilation in both cases.

Typically, focal nodular hyperplasia "FNH" is iso or hypointense on T1- (94–100%), slightly hyper or isointense on T2- (94–100%) and with a bright central scar on T2-weighted images (84%). FNH shows intense homogeneous enhancement in the arterial phase with enhanced central scar and septa in the later phases of the gadolinium-enhanced images. The central scar shows high in signal intensity on T2-weighted images and shows enhancement on delayed contrast-enhanced images **(Shahid et al., 2009).** In our study, the lesions appeared as near isointense with central hypointensity in T1, in phase and out phase WIs and isointense with central high signal in T2WI and high signal in DWI. In dynamic study, the lesions revealed homogeneous vivid enhancement in the arterial phase with non enhanced central scarring and rapidly wash out in the delayed phases with enhanced central scar.

Hepatoblastoma appears primarily in children younger than 5 years of age, while hepatocellular carcinoma occurs primarily after 10 years of age, The incidence of hepatoblastoma in children over 10 years appear only 0.001 % per million **(Khunton et al., 2010).** In our study, we have only one case out of forty cases (2.5 %) presented by hepatoblastoma. This case was 5 months. Accuracy of magnetic resonance imaging (MRI) compared with spiral computed (CT) in the diagnosis of liver mass was reported as following: Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of MRI were 85%, 71%, 92%, 56% and 82% respectively, and that of spiral computed (CT) were 70%, 86%, 95%, 43% and 74% respectively **(Nimer et al., 2012).**

In this study, accuracy of magnetic resonance imaging (MRI) in the diagnosis of liver masses was reported as achieving sensitivity; 86.7%, specificity; 66.7%, PPV; 96.3%, NPV; 33.3% and accuracy; 84.8%.

CONCLUSION

MRI has been used to improve detection and characterization of hepatic malignant lesions. It was found to be more accurate than CT or US in detecting HCC and dysplastic nodules in patients

with cirrhotic liver. MRI also is a very good modality in delineating the internal architecture of the tumor, tumoral margins and intrahepatic vascular invasion. It has the advantage of achieving high-resolution images of the liver without the use of ionizing radiation and has a better sensitivity and specificity compared with CT and ultrasound in cirrhotic patients in whom it can be difficult to distinguish HCC from other lesions. The histopathological study confirmed the diagnostic accuracy of the targeted lesions and tumors.

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ÿäéçÔ ÈÁÎǩż ǦĞĜâèęŹ äŕÊÉÙÀßţǩφÀàÈ ĤÁäĞçá
ĐŽźęÁĞĞÊŕqjäÔĖÝŎäÁÕÖÂUņşÉĞa

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أقسام الأشعة التشخيصية - كلية طب الأزهر "دمياط* - القاهرة **"

خلفية البحث: أصبح واضحاً فى العقود الحديثة أكثر من أى فترة سابقة أن الإعتلالات والوفيات تزداد فى المرضى المصابين بأورام الكبد والتى تحدث إما نتيجة لتليف الكبد أو نتيجة لأورام ثانوية خبيثة من أورام خارج الكبد ، ومع التقدم فى تطوير أجهزة التشخيص فقد أصبح بالإمكان الإكتشاف المبكر لإنتشار مثل هذه الأورام والتمييز بين الحميد والخبيث منها لتحسين الصحة العامة والرعاية الصحية لكثير من المرضى.

الهدف من البحث: بيان دقة الفحص بالرنين المغناطيسى الحيوى بالصبغة فى تشخيص أورام الكبد ومطابقتها بتحليل الأنسجة الباثولوجى وذلك للتوصل الى تشخيص دقيق قبل البدء فى وضع خطة العلاج.

المرضى وطرق البحث: أجريت هذه الدراسة على أربعين مريضاً (25 من الذكور و 15 من الإناث) تتراوح أعمارهم بين 26-77 عاماً وحالة واحدة لطفل عمره خمسة أشهر، بمتوسط عمر(15.46 ± 50.86) تم تحويلهم من أقسام الأمراض المتوطنة والباطنة العامة و الجراحة العامة و كذلك من العيادات الخارجية بمستشفى جامعة الأزهر بدمياط الجديدة فى الفترة من أغسطس 2011 الى ديسمبر2012 ، وقد تم عمل الفحوص الآتية لهم بعد أخذ موافقة كل منهم على إجراء الفحص ، كما تم أخذ موافقة ولى أمر الطفل البالغ من العمر خمسة أشهر.

أ- فحوص معملية وموجات فوق صوتية كمسح شامل للبطن والكبد.

ب- فحص الرنين المغناطيسى بكل أطواره قبل وبعد الحقن بالصبغة.

ج- عينة من الأنسجة للتحليل الباثولوجى لتأكيد التشخيص.

النتائج: تبين من البحث أن أكثر أورام الكبد هى الأورام الخبيثة الأولية وحيدة البؤرة منها ثمانية حالات بنسبة 20%، وستة حالات أورام كبدية متعددة البؤرة بنسبة 15% ، وثانويات الأورام من خارج الكبد فى ثمانية حالات بنسبة 8% ، والأورام الناتجة من تمدد الأوعية الدموية فى سبع حالات بنسبة 17.5% ، ثم العقيدات الناشئة من خلل بالأنسجة فى ثلاث حالات بنسبة 7.5 % ، وسرطانة

الأوعية الصفراوية والتضخم العقدى البؤرى حالتان لكل نوع بنسبة 5 % ، والورم الأرومى الكبدي والتضخم الغددي وعقد ما بعد التليف والآفات الحميدة حالة لكل نوع بنسبة 2.5 % ، وقد تم أخذ عينات من ثلاثة وثلاثين حالة بنسبة 82.5% وتم فحصها باثولوجياً لتأكيد التشخيص فاظهرت تطابق التشخيص فى كل منها ، وتم استبعاد سبع حالات من أخذ العينات بنسبة 17.5% تم تشخيصها بالرنين المغناطيسى كأورام أوعية دموية على أن يتم متابعتها بالأشعة.

الإستنتاج: خلصت الدراسة إلى أن الرنين المغناطيسى له خاصية مميزة فى إنجاز صور عالية التباين والوضوح فى تشخيص أورام الكبد بدون إستخدام الأشعات المؤينة تفوق وسائل التشخيص الأخرى، كما يعتبر أخذ العينة والتحليل الباثولوجى ضرورى لتأكيد التشخيص النهائى أيضاً للحالات الغير محددة المعالم التى يلتبس فيها التشخيص.