COMPARISION OF UNENHANCED AND BIPHASIC COMPUTED TOMOGRAPHY FOR THE EVALUATION OF FOCAL LIVER LESIONS IN BREAST CARCINOMA.

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Background

breast cancer spreads to the liver, it often doesn't cause symptoms. If a liver metastasis does cause symptoms, they can include pain or discomfort in the mid-section, fatigue and weakness, weight loss or poor appetite, fever, and others.

Objective

To compare the findings of unenhanced and biphasic computed tomography for evaluation of focal liver lesions in breast carcinoma patients.

Methods

Female patients with known history of CA Breast confirmed by histopathology of age group 45 to 60 years and having symptoms of loss of appetite**,** weight loss**,** dark-colored urine**,** abdominal swelling or bloating**,** jaundice, a yellowing of the skin or the whites of the eyes**,** pain in the upper right abdomen**,** vomiting.

Results

The sample size was 204, and all patients were females in this study group. With history of pathologically proven breast cancer. The minimum age of participants was 45 and maximum was 88 years. The frequency of patient's with history of discolored urine was negative in 114 and positive in 90. The number of patients with history of loss of appetite was negative in 37 and positive in 167. The frequency of patient's with history of jaundice was negative in 37 and positive in 167. The number of patients with history of abdominal swelling was negative in 114 and positive in 90. The frequency of lesions detected in without contrast was negative in 114

(55.9%) and positive in 90 (44.1%). The frequency of lesions detected in arterial phase of contrast was negative in 182 and positive in 22. The frequency of lesions detected in venous phase of contrast was negative in 36 and positive in 168.
So, I concluded that in breast cancer female patients whose undergo multiphase biphasic computed tomography (without contrast, arterial and venous phase) only venous phase is more efficient to result metastasis.
However, addition of this other two phases adds just and extra radiation dose with more suspicious findings of lesions on non-enhanced CT.

Conclusion

I concluded that only single portal venous phase is efficient in the evaluation of metastasis of breast cancer.

Key Words

Arterial, venous, Cancer.

Introduction

One of the most common malignancies in women is breast carcinoma. In the United States it has been recorded with an estimation of 180,200 new cases diagnosed each year[1].

Metastatic breast cancer is a disease which may spread to any part of the body. It spreads to bone, liver, lungs and brain most commonly. It develops when carcinogenic cells from the diseased part travels throughout the body via blood stream. These carcinogenic cells can reside and grow in other parts of the body causing tumors which give rise to metastatic disease. Most often, metastatic breast cancer is diagnosed after a person has previously received treatment for an earlier stage (non-metastatic) breast cancer. Oncologists denote it as distant recurrence or metastatic recurrence. Sometimes, breast carcinoma is diagnosed when it has already metastasized to other parts of the body and this is known as 'de novo.[2]

Metastasis of breast carcinoma to liver is also known as secondary liver carcinoma, whereas the primary tumor origin is breast parenchyma and the secondary tumors form inside liver. Focal liver lesions are defined as any difference in the morphology of the normal parenchyma that may affect the structural and functional integrity of the liver and biliary tract [3]. The risk that cancer will metastasize, to the liver depends on the location of the original cancer. Primary cancers that are most likely to spread to the liver are cancers of the: breast, colon, rectum, kidney, esophagus,

and lung. One of the main difficulties in liver imaging for metastatic disease is the high prevalence of benign liver lesions that can be misinterpreted as evidence of metastatic disease, thus dramatically changing a patient's stage, and therefore treatment options. Liver hemangiomas, and to a lesser degree focal nodular hyperplasia (FNH), are the main sources of confusion.[5]

Additionally, pseudo lesions (e.g. transient hepatic attenuation differences (THADs), focal fatty sparing / focal fatty change) may further muddy the waters. Therefore, an understanding of the various appearances of metastatic disease is crucial. Liver metastases are typically hypoattenuating on unenhanced CT, enhancing less than surrounding liver following contrast Hepatic metastases are 18-40 times more common than primary liver tumors. Ultrasound, CT, and MRI are all useful for detection of hepatic metastases and evaluation across multiple post-contrast CT series, or MRI pulse sequences are necessary. Liver metastases from breast cancer are associated with a poor prognosis (median survival < 6 months). A subgroup of these patients with no dissemination in other organs may benefit from surgery. Available data in the literature suggest that only in exceptional cases do these patients survive more than 2 years when given chemo hormonal therapy or supportive care alone. We report the results of liver resection in patients with isolated hepatic metastases from breast cancer and evaluate the rate of long-term survival, prognostic factors, and the role of neoadjuvant high-dose chemotherapy[6]

If the hepatic metastatic burden is large then the presentation or symptoms related to the liver disease may include:

- localized pain and tenderness due to capsular stretching
- disordered liver metabolic function
- ascites
- low-grade fever[7]

Prevalence of various liver lesions has marked differences across geographic regions and ethnic groups.[8] Focal liver lesions is more likely to represent a metastatic deposits then primary malignancy in Europe and United States.[9]

Breast carcinoma is said to be the most common cause of liver metastasis. For the purpose of initial staging and assessment of patient response to treatment, it is clinically important to detect

hepatic metastasis. For the purpose of tumor detection CT plays a crucial role. Studies have shown the usefulness of biphasic CT in the detection of hyper-vascular metastasis. The usefulness has been defined for patients with hepatocellular carcinoma previously, although it is generally held that hepatic arterial phase should improve the detection of lesions in hyper-vascular metastasis which are not originating from hepatocellular parenchyma.[10]

Methods

Study Design: Cross-sectional analytical study.

Settings: Al-Razi Health Care.

Study Duration: 9 months after approval of synopsis.

Sample Size: Sample size was calculated with statistical power analysis formula n $= \frac{z^2_{1-\alpha/2} p(1-p)}{d^2}$

While prevalence of focal liver lesions in CA breast is 26 % and calculated sample size was 205 [3]

Sampling Technique: Purposive sampling with 0.05.

Sample Selection:

Inclusion Criteria:

Female patients with known history of CA Breast confirmed by histopathology of age group 45 to 60 years and having symptoms of loss of appetite**,** weight loss**,** dark-colored urine**,** abdominal swelling or bloating**,** jaundice, a yellowing of the skin or the whites of the eyes**,** pain in the upper right abdomen**,** vomiting.

Exclusion Criteria:

Known cases of liver diseases
Known history of hepatitis.
Pregnant women,
Patients with high serum creatinine level.
Male patients

Equipment(s):

Computed Tomography: SIEMENS 64-slice Dual source-Somatom Definition serial number 60501, edition 2012

Results

The minimum age of participants was 45 and maximum was 88 years.

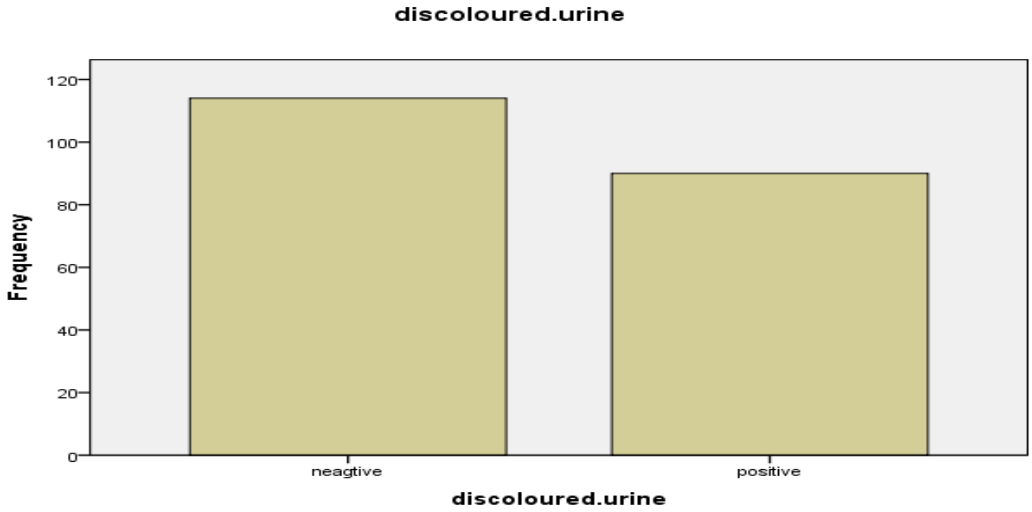
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age of the participants	204	45	88	61.34	6.527
Valid N (listwise)	204				

The frequency of patient's with history of discolored urine was negative in 114 (55.9%) and positive in 90 (44.1%).

Discolored urine

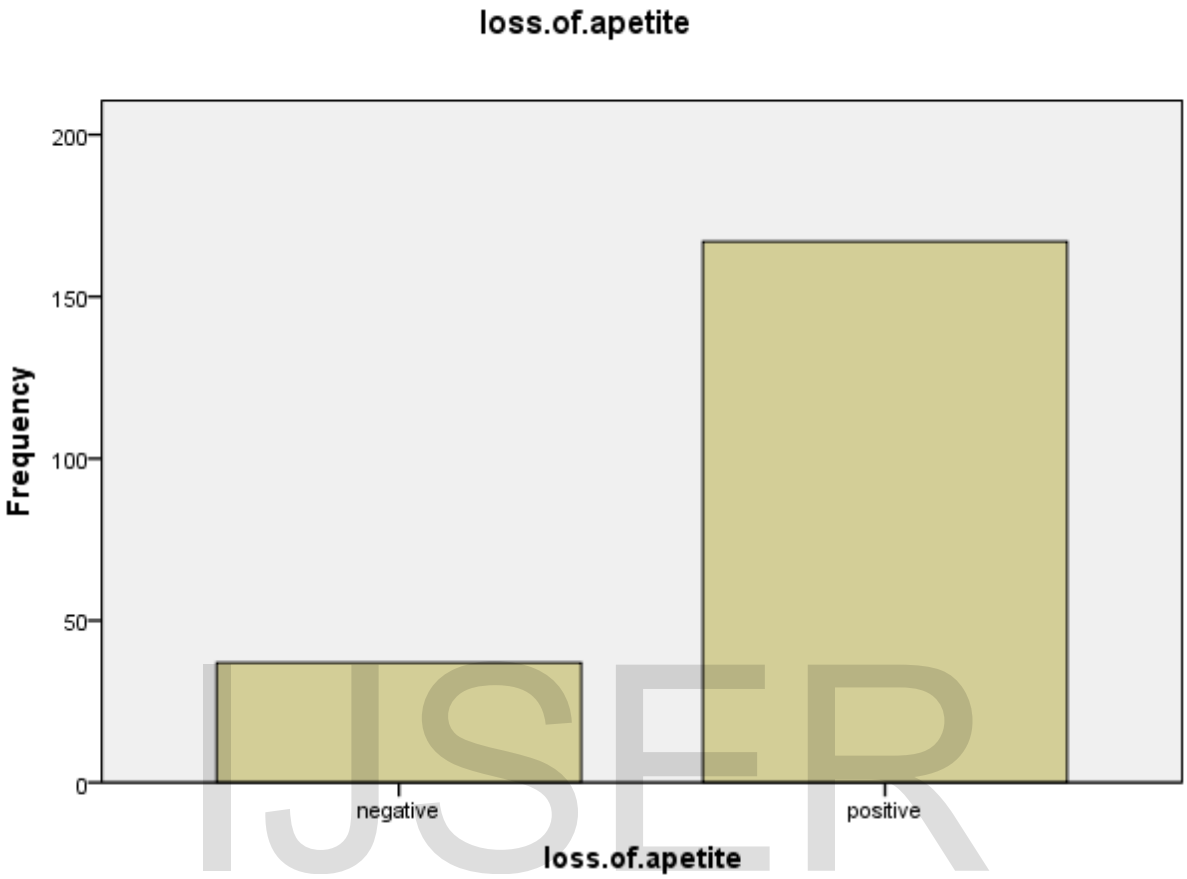
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	114	55.9	55.9	55.9
	positive	90	44.1	44.1	100.0
	Total	204	100.0	100.0	



The frequency of patient's with history of loss of appetite was negative in 37 (18.1%) and positive in 167 (81.9%).

Loss of appetite

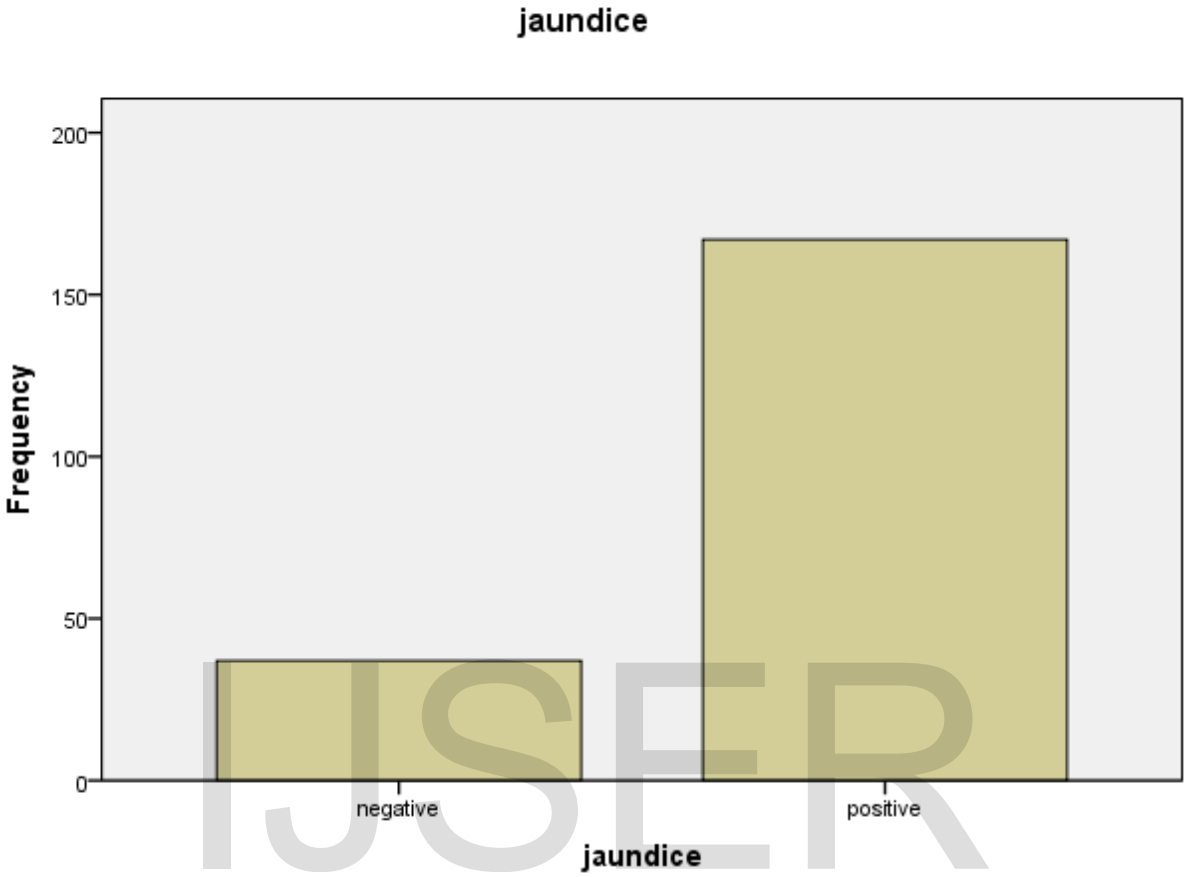
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	37	18.1	18.1	18.1
	positive	167	81.9	81.9	100.0
	Total	204	100.0	100.0	



The frequency of patient's with history of jaundice was negative in 37 (18.1%) and positive in 167 (81.9%).

jaundice

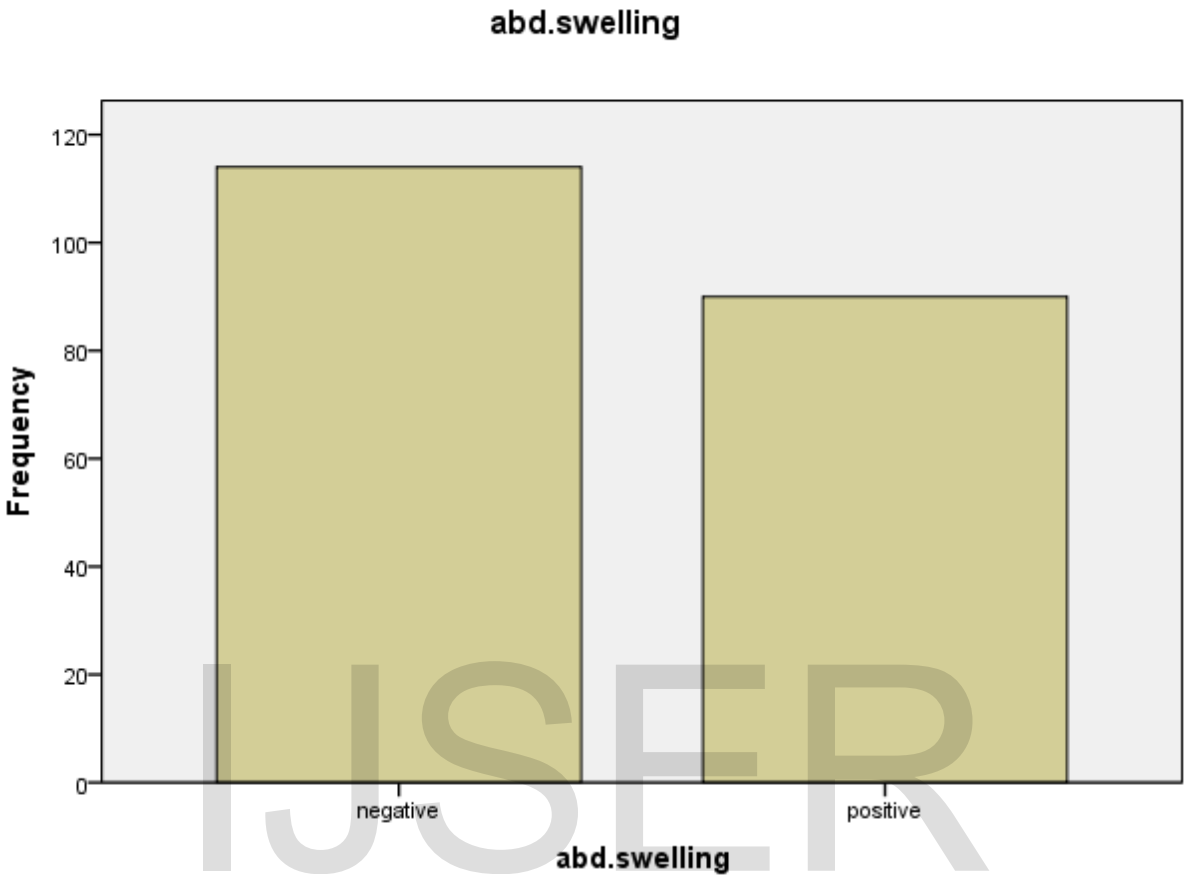
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	37	18.1	18.1	18.1
	positive	167	81.9	81.9	100.0
	Total	204	100.0	100.0	



The frequency of patient's with history of abdominal swelling was negative in 114 (55.9%) and positive in 90 (44.1%).

Abdominal swelling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	114	55.9	55.9	55.9
	positive	90	44.1	44.1	100.0
	Total	204	100.0	100.0	



The frequency of lesions detected in without contrast was negative in 114 (55.9%) and positive in 90 (44.1%).

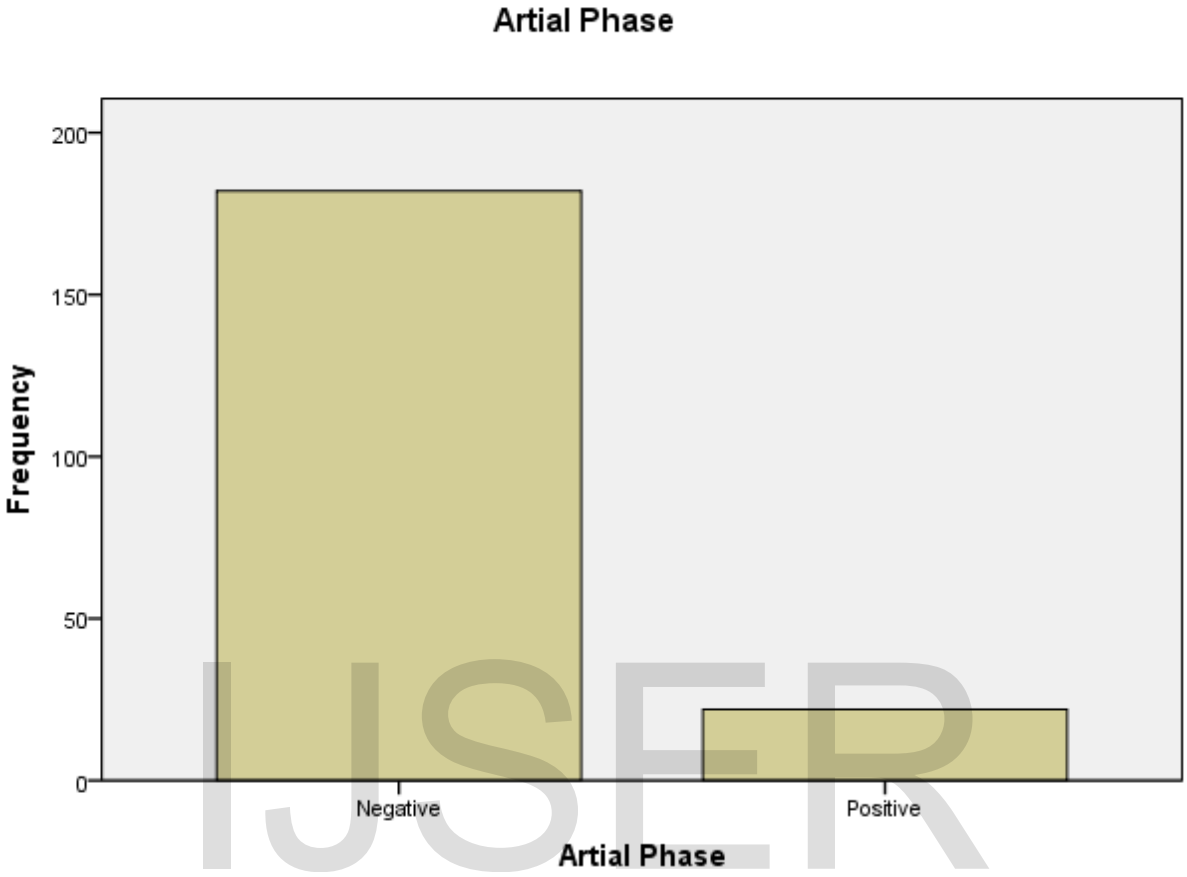
Without Contrast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	114	55.9	55.9	55.9
	Positive	90	44.1	44.1	100.0
	Total	204	100.0	100.0	

The frequency of lesions detected in arterial phase of contrast was negative in 182 (89.2%) and positive in 22 (10.8%).

Artial Phase

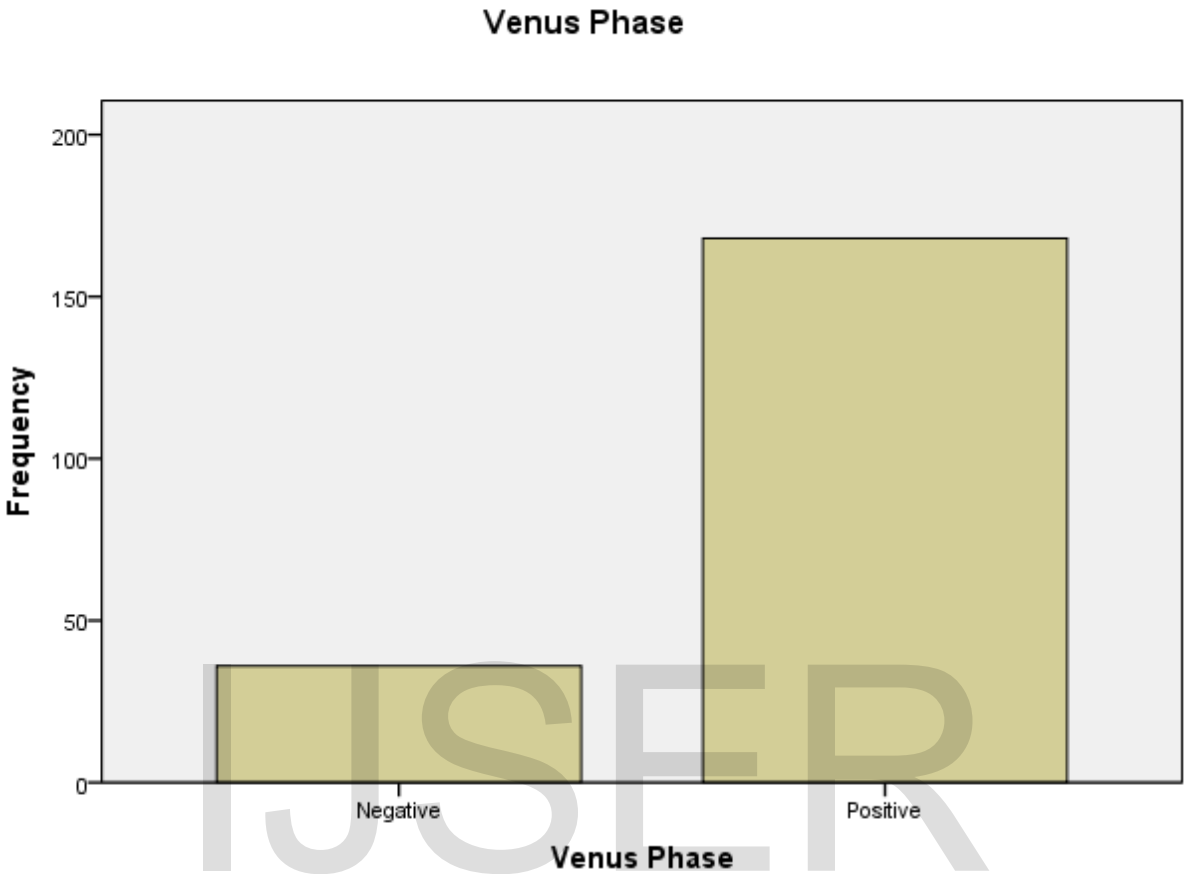
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	182	89.2	89.2	89.2
	Positive	22	10.8	10.8	100.0
	Total	204	100.0	100.0	



The frequency of lesions detected in venous phase of contrast was negative in 36 (17.6%) and positive in 168 (82.4%).

Venus Phase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	36	17.6	17.6	17.6
	Positive	168	82.4	82.4	100.0
	Total	204	100.0	100.0	



Without Contrast * Venus Phase Crosstabulation

Count

		Venus Phase		
		Negative	Positive	Total
Without Contrast	Negative	30	84	114
	Positive	6	84	90
Total		36	168	204

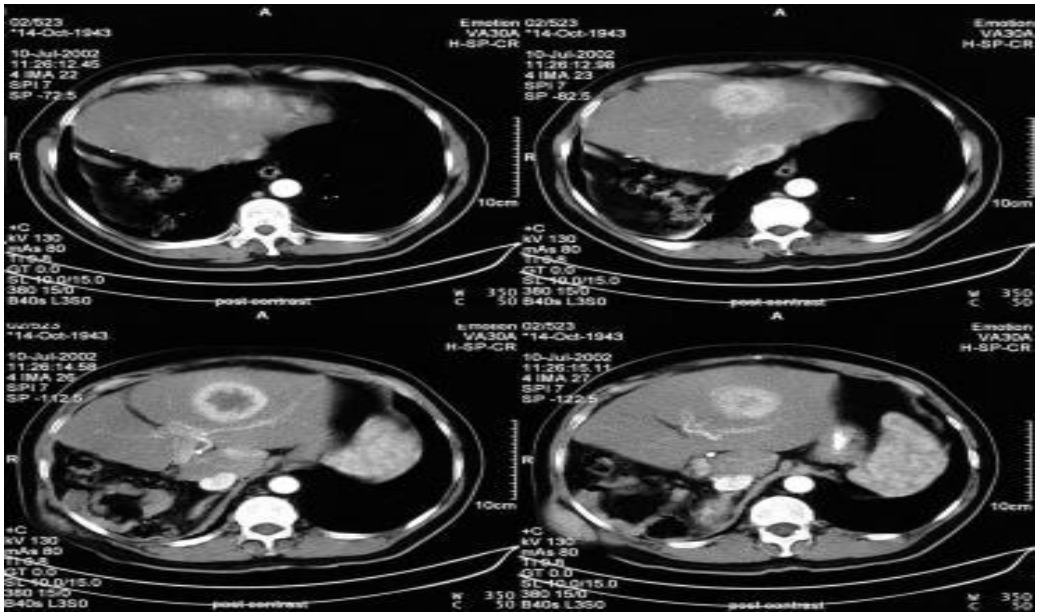


Fig 2[11]

Discussion

The sample size was 204, and all patients were females in this study group. With history of pathologically proven breast cancer. The minimum age of participants was 45 and maximum was 88 years. The frequency of patient's with history of discolored urine was negative in 114 and positive in 90. The number of patients with history of loss of appetite was negative in 37 and positive in 167. The frequency of patient's with history of jaundice was negative in 37 and positive in 167. The number of patients with history of abdominal swelling was negative in 114 and positive in 90. The frequency of lesions detected in without contrast was negative in 114 (55.9%) and positive in 90 (44.1%). The frequency of lesions detected in arterial phase of contrast was negative in 182 and positive in 22. The frequency of lesions detected in venous phase of contrast was negative in 36 and positive in 168.

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