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THE ACCURACY OF MAGNETIC RESONANCE IMAGING FOR SCREENING CERVICAL CANCER MAGNETIC RESONANCE IMAGING (MRI) IS A DEPENDABLE TOOL FOR CANCER DETECTION

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ABSTRACT

Aim: The purpose of this study was to compare the diagnostic accuracy of MRI with that of clinical diagnosis in identifying cervical cancer in patients with cervix carcinoma.

Methods: This study enrolled 90 participants, ranging in age from 30 to 65, all of whom had a clinical suspicion of cervical cancer. After getting the patient's signed consent, we took their age, address, socioeconomic situation, co-morbidities, and clinical presentation into careful consideration. In order to detect the cancer, an MRI of the pelvis was conducted on every patient. The gold standard was histopathology.

Results: Included patients had mean age 48.76 years. Postmenopausal bleeding was the most common symptom, experienced by 45.6% of patients. Atypical vaginal bleeding was the second most common symptom, seen by 31.1% of patients. Fourteen patients (15.6% of the total) reported a foul-smelling, watery discharge, and seven patients (7.8%) reported pelvic discomfort. The MRI data showed a positive outcome for 72.2% of patients and a poor outcome for 27.8% of patients. Although 23 individuals (or 25.6% of the total) got negative results from histological examinations, 67 patients (74.4%) had favorable results. There was a 93.3 percent success rate for MRI diagnoses. The PPV, sensitivity, and specificity were all above average.

Conclusion: We came to the conclusion in this study that magnetic resonance imaging is a useful diagnostic method for the diagnosis of cervical cancer.

INTRODUCTION

When it comes to diseases that affect women, endometrial cancer is by far the worst. A decisive person typically has a 61-year-old age bracket. Presumably, increasing future and extending heftiness rates rely on the newly discovered developing recurrence [1]. Cervical cancer ranks third among the leading causes of gynecological impairment. Employees at a startup typically have an average age of 47. Free Papanicolaou screening and successful in situ carcinoma treatment have greatly reduced the incidence of dangerous cervical development in wealthy nations. We have [2]. The adverse consequences of atypical vaginal bleeding are most commonly seen by postmenopausal patients with hazardous endometrial development. When you're sick, you could notice that your bladder starts to empty sooner rather than later. [3] :

The most major risk factor for developing an unfavorable cervix, especially subtypes 16 (usually associated with squamous cell carcinoma) and 18 T. (usually associated with adenocarcinoma), is infection with the human papillomavirus (HPV). Factors that add to the slanting include a lack of financial stability, early sexual conjunction, a big number of companions, safe hiding, and smoking. In order to identify potentially dangerous cervical disorders, the most used clinical decision-making tool was developed by the International Federation of Gynecology and Obstetrics.

so that structure can be determined [4]. Because of the many shortcomings of this orchestration framework, the patient has some trouble. Core diagnostic procedures and clinical assessments, such as chest x-rays, barium gut cleansing, intravenous urography, cystoscopy, and recto sigmoidoscopy, are prioritized. The examiner plays a crucial role in determining which of these essential tests require the use of ionizing radiation. While trying to diagnose cervical illness, there are significant delays due to inadequate clinical evaluations [5-8]. Some of these obstacles include determining the tumor's size, checking for lymphadenopathy and neighboring organ commitment, and examining the parametrial interruption and pelvic side dividers. When assessing cervical malignancies, the noninvasive X-ray imaging method has certain disadvantages, such as a lack of sensitivity to tumor size, parametrial rupture, and lymph node metastases. This means that MRI is the best option for evaluating the parts of the rule-based prognosis and choosing a treatment plan. An important advantage of magnetic resonance imaging (MRI) is that it may lessen the need for sedation during the examination and the number of exams needed to diagnose a main ailment. This is because magnetic resonance imaging (MRI) is very specific and affective when assessing metastases [9–12]. The purpose of this study was to assess the reliability of magnetic resonance imaging (MRI) for the detection of cervical cancer.

MATERIALS AND METHODS

This observational study was conducted at Department of Radiology, Sheikh Khalifa Bin Zayyed Hospital, Pakistan. A total of ninety people with cervical cancer suspicions and ages ranging from thirty to sixty-five were enrolled. Following the acquisition of the written consent, particular patient information was recorded, including age, domicile, socioeconomic position, co-morbidities, and clinical presentation. We excluded patients who had cervical carcinoma, uterine cancer, were undergoing radiation or chemotherapy, or did not have authorization. Magnitridet scans were performed on every single subject. The Archieva Nova dual Philips [.3] tesla MRI scans of the chosen patients' pelvises were performed by a certified MRI specialist with over three years of expertise. Other images that were acquired included coronal views of the affected area's [T1W and T2] fat sat groups, hub views of [T1W and T2W], and sagittal views of [T2] weighted groups. Following the discovery of Ca cervix highlights on the patients' MRI scans, their X-ray pelvic scans were examined and analyzed for many signs of cervix association. Histological investigation was performed on a biopsy sample. Histopathology analysis is our go-to method. The diagnostic reliability, sensitivity, specificity, PPV, and NPV of MRI were examined. We analyzed all the data using SPSS 24. The MRI and histology data were compared using a chi-square test. We regarded p-values below 0.05 to be statistically significant.

RESULTS

Included patients had mean age 48.76 years.57 (63.3%) cases had poor socio-economic status. Most common

comorbidity among patient was diabetes followed by hypertension, anemia and CVD. (Table 1).

Table-1: Baseline characteristics of the cases

Variables	Frequency (90)	Percentage
Mean age (years)	48.76	
Socio-economic status		
Poor	57	63.3
Middle/high	33	36.7
Other Diseases		
DM	42	46.7
HTN	35	38.9
Anemia	15	16.7
CVD	8	8.9

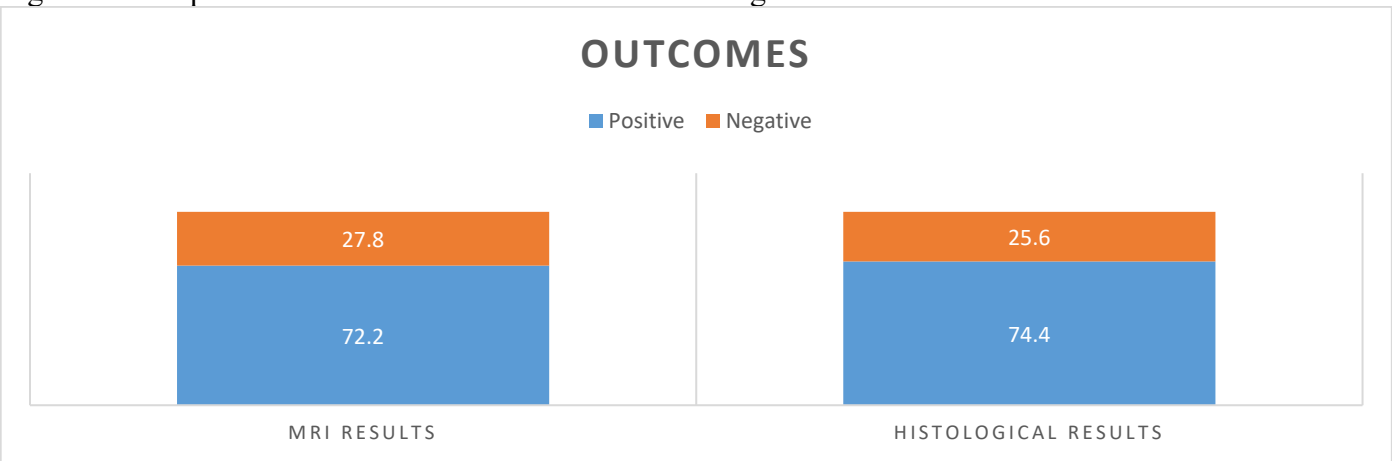
Postmenopausal bleeding was the most common symptom, experienced by 45.6% of patients. Atypical vaginal bleeding was the second most common symptom, seen by 31.1% of patients. Fourteen patients (15.6% of the total) reported a foul-smelling, watery discharge, and seven patients (7.8%) reported pelvic discomfort (table 2)

Table-2: Clinical symptoms of presented cases

Variables	Frequency (90)	Percentage
Clinical Symptoms		
Postmenopausal bleeding	41	45.6
Atypical vaginal bleeding	28	31.1
foul-smelling/ watery discharge	14	15.6
pelvic discomfort	7	7.8

The MRI data showed a positive outcome for 72.2% of patients and a poor outcome for 27.8% of patients. Although 23 individuals (or 25.6% of the total) got negative results from histological examinations, 67 patients (74.4%) had favorable results. There was a 93.3 percent success rate for MRI diagnoses (figure 1)

Figure-1: Comparison of results between MRI and Histological



There was a 93.3 percent success rate for MRI diagnoses. The PPV, sensitivity, and specificity were all above average.(Table 3)
Table-3: Diagnostic accuracy of MRI

MRI	Frequency (90)	Percentage
Accuracy		
Yes	84	93.3
No	6	6.7

DISCUSSION

In addition to being one of the most frequent gynecological disorders, cervical cancer is also associated with a high rate of morbidity and mortality. It is absolutely necessary to arrive at a precise diagnosis as quickly as possible in order to be able to prescribe an effective treatment for this cancerous illness. There are a variety of diagnostic technologies that have been utilized in order to determine malignancy. Some examples of these technologies are magnetic resonance imaging and ultrasonography. The fact that these technologies have been applied is the foundation for this viewpoint, which is titled "MRI: A Helpful Instrument for Diagnosing Malignancy." Histological examination, on the other hand, is a method that is utilized quite frequently [13,14]. This research was also carried out with the purpose of determining whether or not magnetic resonance imaging (MRI) is an efficient diagnostic tool for the identification of cervical cancer. Within this framework, a total of seventy-five female patients who had been diagnosed with cervical cancer on the basis of clinical suspicion were evaluated. These patients were all female. There were 34 percent of patients who were between the ages of 42 and 52, and the next largest age group was those who were between 51 and 63 years old (28 percent). These investigations included patients who were between the ages of 42 and 62 years old, which accounted for 76% of the total patients [15]. The results of this study were comparable to those of a number of other studies that were carried out on cervical or endometrial cancer.

After menopause, the most common symptom is bleeding, followed by unusual vaginal bleeding, the presence of foul-smelling watery discharge, and discomfort in the pelvic region. Postmenopausal bleeding is the most prevalent symptom. Patients had a diverse array of symptoms when they presented themselves for treatment. As a result of the research carried out by Tabassum and colleagues [16], it was shown that irregular vaginal bleeding was the most common type of vaginal bleeding. Vaginal discharge was experienced by 32 percent of patients, post-coital bleeding was experienced by 19 percent of patients, and post-menopausal bleeding was experienced by 46 percent of patients. In addition, post-menopausal bleeding was experienced by 42 percent of patients. It was determined that cervical cancer was the cause of each of these symptoms. The overall number of people who displayed several symptoms was fifty-two, which is equivalent to 34 percent. According to specific subsequent examinations [17,18], the most common indication of cervical cancer was bleeding that occurred after menopause symptoms had been observed. Based on the data obtained from the magnetic resonance imaging (MRI) that was utilized in this study, it was found that 72.2% of patients experienced a positive outcome, whereas 27.8 percent of patients experienced a negative outcome. In spite of the fact that histological investigations yielded negative results for 23 patients, which constitutes 25.6% of the total, 67 patients, which constitutes 74.4 percent of the total, were found to have positive results. Throughout the entirety of the trial, the diagnostics performed by MRI had a success rate of 93.3%. According to research carried out by Masroor I et al[19], the magnetic resonance imaging (MRI) technique was discovered to have sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values of 93%, 89%, 89%, 73%, and 97% when it came to the diagnosis of cervical invasion. With all due respect, this information is presented here. The findings of a different study on cervical cancer that was carried out by Dakshit et al.[20] demonstrated that when magnetic resonance imaging (MRI) was compared to histology for the title of stromal invasion of >2/3RD, MRI had a sensitivity

rate of 95%, a specificity rate of 89%, a positive predictive value of 89%, and a negative predictive value of 95%. The value in question is 0.0001. The findings of Nagar et al. indicated that the sensitivity was 71%, the specificity was 92%, the positive predictive value (PPV) was 89%, and the negative predictive value (NPV) was 81%. All of these values were derived from the data collected.[21]

CONCLUSION

The cancerous gynecological disease known as cervical carcinoma can develop in women of any age. On the other hand, cervical cancer is more common in women who are older. Early and accurate diagnosis is crucial for cervical cancer management. We found that magnetic resonance imaging (MRI) has a high sensitivity, specificity, and accuracy rate, making it a promising diagnostic tool for the early diagnosis of cervical cancer.

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