



THE IMPLEMENTATION OF MRI FEMUR EXAMINATION TECHNIQUE WITH CONTRAST WITH CLINICAL SARCOMA OF FEMUR IN THE RADIOLOGY INSTALLATION OF DR. H. ABDUL MOELOEK HOSPITAL OF LAMPUNG PROVINCE

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Abstract

Magnetic Resonance Imaging (MRI) is a diagnostic scan used for medical imaging procedures. From the results of the Pre-Survey at the Radiology Installation of Dr. H Abdul Moeloek Hospital in 2023 - 2024, there were 79 patients in the Femur MRI examination and 4 (four) patients in the Femur MRI examination with clinical Suspect Femur Sarcoma. Sarcoma is a type of cancer that develops from certain tissues, such as bones or muscles. Globocan data states that in 2020 there were 18.1 million new cases with a death rate of 9.6 million deaths. This incidence in Indonesia (136.2/100,000 population) is ranked 8th in Southeast Asia, while in Asia it is ranked 23rd. This study aims to determine the procedure for managing femur MRI examinations with clinical Femur Sarcoma at the Radiology Installation of Dr. H. Abdul Moeloek Hospital, Lampung Province. This type of research is descriptive with a qualitative approach. Respondents of information collection by interviewing 2 (two) Radiographers, 1 (one) Radiology Specialist Doctor and a sample of 79 (seventy-nine) patients was taken 1 (one) patient. The results of the study based on data collection, observation and interviews, MRI examination patients were scheduled, patients fasted for 5-6 hours, and had undergone laboratory tests of urea creatinine, equipped with the provision of inform content. MRI examination technique, the patient was lying supine with the feet first position in the gantry with a center of 0 (zero) and Air Coil was installed. The contrast material used was 8 (eight) cc. The protocol used was Sagittal T2, T-1, Axila T2 STIR and Coronal T2-T1. From the results of the examination, a mass measuring 1K 15.2X13, 1X22, 1 cm was obtained in the posterior soft tissue ½ proximal distal.

Keywords: MRI Femur; Contrast; Sarcoma

INTRODUCTION

Magnetic Resonance Imaging (MRI) is a technique for depicting body cross-sections based on the principle of magnetic resonance of hydrogen atomic nuclei. MRI imaging techniques are relatively complex because the resulting images depend on many parameters. The tool has the ability to create coronal, sagittal, axial and oblique section images without much manipulation of the patient's body. If the parameter selection is correct, the quality of the detailed image of the human body will be clearly visible so that the anatomy and pathology of body tissues can be evaluated carefully.

The femur is the bone of the femoral region and is the longest bone in the body. Its proximal end is marked by a caput and neck, and two large prominences (the greater and lesser trochanters) at the top of the body. Sarcoma is a type of cancer that first appears in soft tissues, such as fat, muscle, nerves, fibrous tissue, blood vessels, or deep skin tissue. This cancer can appear in any soft tissue, but is most common around the arms, hands, or feet. Soft tissue sarcomas include a large group of malignant tumors of the soft tissues, including cartilage, muscle, fat, nerves, blood vessels and other connective tissues. This group has many histologic subtype variations, more than 50-70 subtypes. Embryologically, most originate from the mesoderm, with neuroectodermal contributions in the case of peripheral nerves.¹⁻⁴

Globocan data states that in 2020 there were 18.1 million new cases with a death toll of 9.6 million deaths, where 1 in 5 men and 1 in 6 women in the world experienced cancer. The data also states that 1 in 8 men and 1 in 11 women died from cancer. The incidence of cancer in Indonesia (136.2/100,000 population) is ranked 8th in Southeast Asia, while in Asia it is ranked 23rd. The highest incidence in Indonesia for men is lung cancer, which is 19.4 per 100,000 population with an average mortality rate of 10.9 per 100,000 population, followed by liver cancer, which is 12.4 per 100,000 population with an average mortality rate of 7.6 per 100,000 population. Meanwhile, the highest incidence for women is breast cancer, which is 42.1 per 100,000 population with an average mortality rate of 17 per 100,000 population, followed by cervical cancer, which is 23.4 per 100,000 population with an average mortality rate of 13.9 per 100,000 population.

Based on PKL 3 for 1 month at RSUD. Dr. H. Abdul Moeloek Lampung Province, there were 4 MRI examinations of the Femur with clinical Suspects of Femur Sarcoma, the researcher wanted to know the procedure starting from the tools and materials, patient preparation, examination techniques and the results of the MRI examination with clinical suspects of sarcoma.

METHODS

This type of research is descriptive with a qualitative approach. This study uses data collection and observation methods by visiting or coming directly to the research location. Interviews were conducted to obtain complete information regarding the problem. The population in this study were all MRI Femur examination patients with suspected sarcoma clinics in December 2023 - May 2024, there were 4 (four) with a sample of 1 (person) patient. The subjects to be studied were femur examination patients with suspected sarcoma clinics in the radiotherapy installation. Respondents for information collection by interviewing 2 (two) Radiographers and 1 (one) Radiology Specialist Doctor.

RESULTS AND DISCUSSION

From the research that has been done, it is clearly obtained how the procedure for managing MRI Femur with contrast in clinical Sarcoma femur in the Radiology Installation of RSUD. Dr. H. Abdul Moeloek Lampung Province is as follows: The patient came with complaints of leg pain and difficulty walking due to the growth of a lump. The lump has been growing since early 2023.

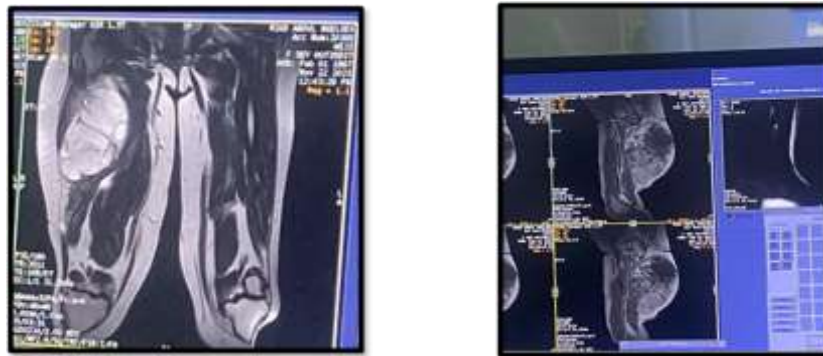
Preparation before the MRI Femur examination is that the patient has been scheduled for an MRI examination, the patient fasts 5-6 hours before the examination begins. The goal of fasting is that the stomach is expected to be

empty and the intestines or colon are expected not to be filled with dirt, the patient undergoes a urea creatinine laboratory test with normal results, providing informed content to the patient's family and signed by the patient's family and the Radiographer. Screening or safety and examination information is carried out verbally by the Radiographer.

MRI Femur examination technique with clinical Sarcoma Femur The patient lies on his back with the feet first position on the examination table, then arranges both of the patient's hands beside the body, one hand holds the emergency bell and both legs are straight. Turn on the collimation lamp and adjust the examination table until the focal point (central point) is aligned with the middle of the femur. Then attach the Air coil, the patient enters the gantry with the center showing the number 0 (zero) on the screen on the MRI plane.

The patient's contrast media is inserted by a skin test to determine whether or not they are allergic to the contrast material. The contrast media material that is inserted uses manual media as much as 8 cc with the Militance brand. The sequence or MRI Femur examination parameters used Sagittal T2MEGRE, aims to see pathology clearly, Axial T2 STIR STIR, is designed to suppress signals from fat, also increases signals from tissue with long T1 and T2 relaxation times, such as neoplastic and inflammatory tissue, On the T1 slice is to assess its anatomical structure and T1 is a black liquid (hypointens), while T2 is to emphasize the presence of pathology or abnormalities and fluids. From the results of this examination interview using the parameters Sagittal T1, SagittalT2 and Coronal T1, Corona T2. The following is a sequence of coronal T1 contrast and T1 STIR slices.

Figure 1.A
Coronal T1 Contrast and STIR Sequence



The results of the femur examination with clinical femoral sarcoma. The doctor's reading results were obtained: Mixed mass, septate measuring 1K 15.2X13.1X22, which is to measure congenital abnormalities of the tumor from 1cm in the posterior soft tissue of the proximal-distal 1/3 of the right femur appears urgent, right gluteus maximus, right semitendinosus, right adductor magnus, right adductor brevis, right adductor longus to part of the subcutis area, clearly visible on the T2 sagittal section.

Figure 2.A
Pathology is clearly visible on the T2 Sagittal section.



CONCLUSION

Based on the research results, it can be concluded as follows: Patient preparation, MRI femur patients with clinical sarcoma were scheduled, patients fasted for 5-6 hours, filled out informed consent, normal urea creatinine laboratory test results. MRI Femur examination technique in clinical sarcoma uses Air coil with the patient's feet first position in the gantry and adjusts the central point in the middle of the femur with the center showing the number 0 (zero) on the MRI plane. The contrast material that is inserted uses manual media as much as 8 (eight) cc. The parameters or sequences used are sagittal T2MEGRE, Sagittal T-1, Axial T2 STIR and Coronal T2-T1. The results of the image obtained are a mass measuring 1K15.2X13.1X22, 1cm in the posterior soft tissue of the proximal distal 1/3 of the right femur.

ACKNOWLEDGMENT

This journal article was written by (Novita Wijaya, Ila Ma'rifa, Made Yully, Nindi Chyntia Putri and Patriot Bangsa Lampung Health Sciences College) based on the research results of the Implementation of Femur MRI Examination Techniques with Clinical Contrast for Femur Sarcoma in the Radiology Installation of Dr. H. Abdul Moeloek Hospital, Lampung Province, which was funded by Patriot Bangsa Lampung Health Sciences College through the 2024 Research Grant Program, and Community Service. The contents are entirely the responsibility of the author.

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