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Computed tomography scan of the paranasal sinuses With Sinusitis Cases in General Hospital Haji Adam Malik

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Abstract*-Paranasal sinuses are the sinuses or cavities that are around the nasal (nose) or a cavity in os.maksilla, os.frontal, os.sphenoidal and os.ethmoidale are generally coated with mucous periosteum and filled with air. Sinusitis is an inflammation of the mucosa of the paranasal sinuses usually caused by viral and bacterial infections. To demonstrate this sinusitis can be done with conventional radiographic examination with projections Waters and lateral.Namun examination Computed Tomography - Scan (CT Scan) is far superior to paranasal sinuses well as can analyze in detail the bones and soft tissue forms.*

Keywords : *CT-Scan, paranasal sinuses, sinusitis.*

1. Introduction

Paranasal sinuses are the sinuses or cavities that are around the nasal (nose) or a hollow cavity in os.maksila, os.frontal, os.sphenoidale and os.ethmoidale are generally coated poriosteum mucosa and contain air (Snell, 1993). Nose or nasal an air duct of the first, has two holes (kavumnasi), separated by the nasal septum (septum nasi), in which there are feathers nose useful to filter the air, dust and dirt into the nostril (Syaifuddin, 1997). Sinusitis is the inflammation of the mucosa of the paranasal sinuses (Rusdy, 2006). The main cause is salesma which is a viral infection which can then be followed by a bacterial infection. Sinusitis there are two kinds of multisinusitis that when the multiple sinus and pansinusitis that when the entire paranasal sinuses. Paranasal sinus examination, can be done with conventional radiographic examination of the lateral projection and waters. By revealing picture sinus.Namun fourth cavity examination Tomography- Scan Computed vastly superior to the paranasal sinuses well as can analyze in detail the bones and soft tissue forms (Rasad, 2005). Computed Tomography is a picture that was built by computer using X-rays collected from various points around the perimeter and forming part of the so-called scanned so as to produce cross-sectional tomographic picture plane (slice) is sliced from the body (Balinger, 1986). Here the author of the best uses 4 types of CT scan slice by slice thickness (thick slices) 3mm for coronal pieces which can already show a picture of abnormalities in paranasal sinus properly and optimally. Excess CT scan that can generate cross-sectional radiographic images of the body that can not be done by radiographic techniques 2D (2 Dimensional) bkonvensional (X-rays). Pieces of the body can be adjusted as needed, whether sagittal cuts.

2. Research Methods

2.1 Types of research

This type of research carried out in the preparation of this scientific writing is descriptive research.

Peelitian descriptive study was aimed to explain or describe a situation, event, object whether people, or anything related to variables that can be explained both by numbers and words (Setyosari, 2010).

2.2 Time and Place of Research

This study was conducted in April 2015 and housed in the CT-Scan Radiology General Hospital Haji Adam Malik Medan.

2.3 Data collection technique

To obtain maximum data then here the authors use several ways to collect data, among others:

1) Observation
   Namely to obtain data by observing and following directly Paransalis Sinus CT scan.
2) Documentation
   By studying the results of a CT scan found the current head of clinical practice, either normal or that there are abnormalities in particular sinusitis.
3) Interviews and Consultation
   Namely by conducting interviews with patients about the disease, the authors also conducted consultations with the radiographer and supervisor related to the examination and writing scientific papers.

2.4 analysis Results

The results obtained in this study is qualitative data is data related to the categorization of the characteristics or nature of the variables, this data is in the form of sentences, statements and images. This qualitative analysis begins with the direct observation of the course of examination of paranasal sinuses CT-Scan Radiology at General Hospital Haji Adam Malik Medan.Dari examination results do illustrate the paranasal sinuses CT scan that is good and worthy to be read in the enforcement of diagnosis .In the selection tools, and procedure on pasien.Tetapi in the examination of paranasal sinus CT scan uses the patient prone position (face down) will cause the patient less comfortable circumstances, and therefore needs to take place effort in order to position the patient in the examination more comfortable daoat ,

3. Results and Discussion

A. Result

1) Patient identity

Name : Ny.DS
Age : 54 years
Gender : Women
No.RM : 00065929
Checking type : CT scan of paranasal sinuses
diagnosis Examination : Headache
Date of inspection : January 2017
doctors Readers : Dr.Henny Maisara.S, Sp.Rad

2) Examination procedure

Paranasal sinus CT scan on suspicion of sinusitis performed at the General Hospital Haji Adam Malik in Radiology at the indoor unit CT-Scan Jl.Bunga lau 17 Medan

1) Patients arrived with a letter of introduction ct-scan of paranasal sinuses
2) Patients register at the counter ct-scan radiology section
3) The cover letter is processed at the counter ct-scan
4) Officers do the typing of patient data in computer ct-scan, after patient data has been charged then the patient was called into the room ct-scan
5) The patient is positioned on the examination table, after the examination using CT-Scan plane as follows:

3) Aircraft Spefikasi CT-Scan

Brands / Aircraft : Toshiba Asteion 4 / Helical or Spiral
tension : 120 kV - 150 kV
Strong currents : 260 mA - 500 mA
Serial No. Tubes : A5592098
filter Default : Al
generation Tool : III / helical scan

Fig 1. Aircraft Toshiba Asteion CT-Scan 4 (General Hospital Haji Adam Malik)

4) **Procedure best use of CT-Scan**

Before the best use ct-scan plane should be done warming (warming-up) ± 3 min

1) Press the power button and press the ON button on the tool dryview.
2) Display the menu screen monitor scanning right click on the mouse select menu system maintenance.
3) In the maintenance system menu select warming up after that wait until the light turns on x-ray.
4) The tool is ready for use

5) **preparation of the patient**

Before the examination, the patient should be done by explanation of the examination procedure to be performed. All items subject to the patient that may hinder the implementation of the examination should be released as earrings, sunglasses, hair clips, necklaces and other objects that may interfere with the examination. Patients are encouraged to not move when the investigation is ongoing.

6) Examination Preparation Tools

1) CT-Scan plane stand-by (ready to use) and their components.
2) Head fixation device (head holder).

7) **Mechanical Inspection**

1) patient position

Patients sleep prone (face down) on the examination table, both hands flat beside the body.

Fig 2. patients prone position (face down)

Caption :

1) Gantry
2) Button switch
3) Patients in the prone position (face down)
4) The examination table

2) Position Objects

Head resting on the head holder, with the patient's chin on a head holder. Hyperextension head on the head holder and cultivated sedongak possible, then head of the bergerak.Setelah fixed so as not to object inserted into the gantry.

Fig 3. The position of the object within the gantry

8) **Results Ekpertise**

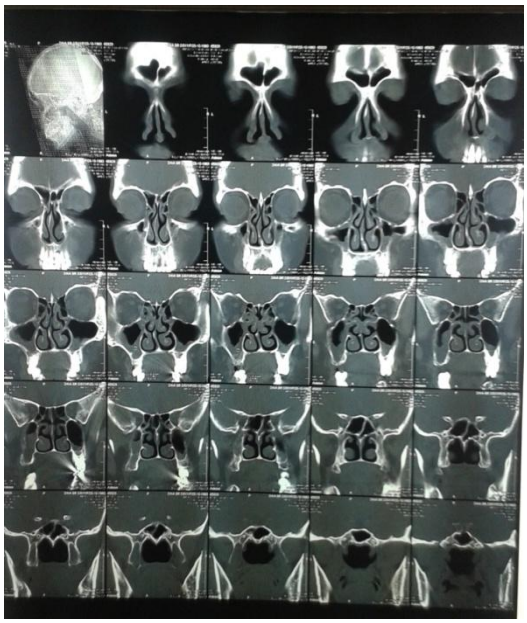

Fig 4. Results of examination of paranasal sinuses CT scan at the General Hospital Haji Adam Malik

Caption :

1) The frontal sinus is clean
2) Septal deviation to the left
3) sinusitis maxilari
4) Concha nasalis
5) sinusitis ethmoidalis
6) sinusitis sphenoidalis
7) Scanogram

9) **Check up result:**

Perselubungan seem homogenous in the ethmoid sinuses, maxillary and sphenoid right and left. Osteomeatal closed left and right complex. Nasal septum deviation to kiri.Tulang-bone soft intak.Jaringan good impression.

10) **Radiological conclusion:**

Sinusitis ethmoid, sphenoid maksilla.dan right and left.

4. Discussion

In accordance with the purpose of the study described above author, the writer can describe and discuss the research objectives are as follows:

1) Efforts should be made to produce an optimal overview on paranasal sinus CT scan in cases of sinusitis in General Hospital Haji Adam Malik:
   a) A CT-Scan Sinus paranasal with cases of sinusitis in General Hospital Haji Adam Malik performed with the patient prone (face down) so that it causes the patient to feel uncomfortable, and therefore give an explanation to the patient to maintain this position a few minutes to process scanning is complete. Because the patient prone position (face down) and head hyperextensi (tilted) will produce optimal picture for the fourth picture shows sinus ostium and the description will appear on gambar.Sebagai head fixation device placed under the patient's chin holder for patient comfort as well as the head of the patient remains hyperextensi maintained in position.
2) The checking procedure paranasal sinus CT scan at the General Hospital Haji Adam Malik is the case of sinusitis in General Hospital Haji Adam Malik was appropriate because once a patient registration at the Radiology then will be processed and the patient can perform the inspection CT- scan. The examination was conducted with patients sleeping prone position (face down) and head hyperextensi (tilted) using CT-Scan plane Toshiba Asteion 4 types Helical third generation.
3) Parameter a CT scan of the sinuses paranasal at the General Hospital Haji Adam Malik: The parameters used in a CT-Scan Sinus paranasal at the General Hospital Haji Adam Malik was appropriate because the examination is done by taking images in pieces coronal with slice thickness (slice thickness) 3 mm.
4) Advantages and disadvantages of a CT-Scan in the paranasal sinuses General Hospital Haji Adam Malik:
   a) Advantages of doing a CT-Scan Sinus paranasal with cases of sinusitis in General Hospital Haji Adam Malik that the image generated will have the image contrast is good and the result image obtained will show the details of organs and tissues well as the images are displayed in the form of cuts / thinner slices (per slice) .Sehingga enforcement will diagnose more quickly and accurately.
   b) CT-Scan losses paranasal sinuses in sinusitis cases will result in the patient receiving radiation doses greater than conventional radiography examinations. Therefore provide proper radiation protection at pasien.Salah one way, namely when the inspection was carried out to give a small scan time to offset the radiation dose received by the patient.

5. Conclusion

After the authors follow and observe the inspection of paranasal sinus CT scan on suspicion of sinusitis in Radiology General Hospital Haji Adam Malik then be drawn some conclusions as follows:

1. Examination of paranasal sinus CT scan with sinusitis cases performed with CT scan plane for the brand Toshiba Asteion 4 types Helical with the patient prone position (face down) on the examination table will show the picture to the four sinus cavities.
2. Examination of paranasal sinus CT scan carried out have shown abnormalities in the patient's sinus cavity sinusitis sinus maxilari, sphenoidalis, ethmoidalis and with the exception of the frontal sinus.
3. Examination of paranasal sinus CT scan with sinusitis cases will give the patient received radiation doses greater but can be minimized by using the scan time is small.

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