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EFFECTIVENESS OF HYSTEROSALPINGOGRAPHY EXAMINATION WITH CLINICAL INFERTILITY AT THE RADIOLOGY INSTALLATION IN 2023

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ABSTRACT

Hysterosalpingography (HSG) is a radiological examination of the female genital organs using contrast material to visualize some tissue structures and improve the image quality of a more informative image to see any abnormalities in the intra uterus and evaluate the patency of the tubes. This research was conducted at Pekanbaru Medical Center Hospital from May to June 2023. Descriptive qualitative research type. The research informants were four people, namely one radiologist and three radiographers. The data collection method consists of literature study, observation, interviews and documentation then the data is processed using comparative, namely comparing the results of observations with the existing theory in the reference book through data reduction, data presentation and conclusions. The use of contrast media as much as 7 cc with a ratio of 5 cc contrast media and 2 cc aqua des, the first stage was injected as much as 3.5 cc then exposed and the next 3.5 cc for the second exposure. AP post contrast projection has been able to fill in all parts of the uterus and both tubes, so there is no need to add oblique projections because it can establish a diagnosis. Oblique projection should be added if the contrast medium spills over or does not reach the patient's tubes.

Keywords : Effectiveness, Hysterosalpingography, Infertility, Projection.

BACKGROUND

Infertility is a problem faced by married couples who have been married for at least one year having regular intercourse without using contraception, but have not succeeded in getting pregnant. Infertility is said to be primary infertility if the couple has never experienced pregnancy before. Meanwhile, it is said to be secondary infertility if a married couple fails to get pregnant after one year postpartum or postabortion, without using any contraceptives (Anwar, Mochamad. Baziad, Ali. Prabowo, 2014). With the development of science and technology in radiology, hysterosalpingography has become a relatively quick non-invasive examination to evaluate the fallopian tubes and uterine cavity. Hysterosalpingography (HSG) is the best modality to image the fallopian tubes especially in detecting infertility (C. W Eng, P.H Tang, 2007).

Hysterosalpingoraphy is a radiographic examination procedure to diagnose structural and functional defects such as fallopian tube blockages and polyps using contrast media. besides HSG can diagnose abnormalities it can also be used as a therapeutic (Bontranger, 2014). In its therapeutic use, the injected contrast media serves to dilate the narrowed fallopian tubes (Linder, 2019). HSG examination is performed to image the uterine cavity and patency of the fallopian tubes by inserting a catheter into the uterine cavity and injecting a water-soluble contrast medium through the catheter (C. W Eng, P.H Tang, 2007).

To show abnormalities or pathology of hysterosalpingography examination, a water-soluble contrast medium is used which is dilute, provides satisfactory opacity and easily enters the tube and causes contrast spillover into the peritoneal cavity. The method of inserting contrast media can be done by installing an HSG set or if the patient in certain conditions is not resistant to materials made of metal, a catheter can be used as a medium for inserting contrast media into the vaginal opening (Simpson, W. L., Beitia, L. G., & Master, 2006). Contrast media is a substance used to help visualize some tissue structures and improve image quality in diagnostics (Recommendation of the International Commission on Radiological Protection, ICRP Publication 60 Oxford, Pergamon, 2007). The administration of contrast media is intended to obtain good and informative examination results (Akhadi, 2020).

The contrast media insertion technique in hysterosalpingography (HSG) examination consists of two stages. The first stage is the insertion of 5 ml of contrast media using antero posterior (AP) projection with the aim of showing contrast media filling the uterus.(Bushong, 2013) The second stage is the insertion of 10-15 ml of contrast media

using right oblique (RPO) and left oblique (LPO) projections with the aim of full filling of the uterine cavity, left and right fallopian tubes and spillage of contrast media on the peritoneum (Bushong, 2013). In normal conditions, both fallopian tubes and free spillage of contrast media, cervical canal and uterine cavity have firm and flat boundaries (Akintomide, A.O. Eduwen, D.U. Ikpeme, A.A. Bassey, 2016). After the examination is complete, the HSG equipment set is removed. All projections use a 24x30 cm cassette with a central point (CP) 5 cm above the pubic symphysis, then the collimation is adjusted on the object (Long, Bruce W. Smith, Barbara J. Rollins, 2016). In normal condition, both fallopian tubes and spillage are free of contrast medium, cervical canal and uterine cavity have firm and flat boundaries (Onwuchekwa, C.R dan Oriji, 2017).

Based on the observations of researchers at the Radiology Installation of the Pekanbaru Medical Center Hospital, the hysterosalpingography examination did not use a photo plan as a preliminary photo but immediately performed a post-contrast AP projection with two stages with the use of contrast media as much as 7 cc with a ratio of 5 cc contrast media and 2 cc aqua des, for the first stage of contrast AP photos using contrast media as much as 3.5 cc then do the exposition and the second stage of contrast AP photos as much as 3.5 cc of contrast media after that do the exposition. The projection used is only AP post contrast projection, there is no use of right oblique or left oblique projections.

METHOD

The type of research used in this study is descriptive qualitative with observational studies. This research was conducted at the radiology installation of Pekanbaru Medical Center Hospital on June 10, 2023, research informants amounted to 4 people consisting of 1 radiology specialist and 3 female radiographers, data collection was carried out by literature study, observation, interviews and documentation. Data processing uses the data triangulation method to obtain data validity, namely by combining various data with existing sources, data analysis is carried out when data collection takes place interactively.

RESULT AND DISCUSSION

After conducting research on hysterosalpingography examination at the radiology installation of the pekanbaru medical center hospital, the following results were obtained:

Table 1. Hysterosalpingography Examination Procedure in Hospital Installation Pekanbaru Medical Center

Procedure	Informant's answer
Inspection schedule	The examination is carried out on days 9-11 starting from the first day of menstruation until the last day of menstruation
Patient Preparation	Patients are advised not to have intercourse before the examination, before the examination the patient is instructed to urinate first
Number of contrast media	The contrast medium used is Hexiol brand as much as 7 cc mixed with distilled water as much as 1 cc or 2 cc
Tools and Materials	X-ray plane, 24x30 cm cassette, computed radiography (CR), spotlight, S size speculum, 7 cc positive contrast medium, one 3 cc syringe, one 10 cc syringe, aqua des, no.8 catheter, sterile gauze, betadine and two clamps
Projection Plan Anterior Posterior (AP) Photo	No use of photo plan
AP Post Contrast Projection	There is a two-stage AP post-contrast projection, with the first stage using 3.5 cc contrast media and the second stage also using 3.5 cc contrast media
Oblique Projection	No oblique projection is used, oblique projection is performed when there is no visible spillage of contrast medium in the tube

Table 2. Radiograph Results and Radiograph Criteria

Radiograph	Radiologist's Expertise Result

  AP Post contrast stage 1 AP Post contrast stage 2	Insertion of contrast through the Dn catheter of non-ionic contrast as follows: Uterus: filled with contrast, antiflexion location, good shape and size, no filling defect/additional shadow visible. Right-left tube: filled with contrast, good shape and size, Spill (+) Impression: Normal uterus, both tubes are patent

HSG examination is carried out at PMC Hospital on the 9th-11th day from the first day of the last menstruation. where at the time of the examination the patient has entered the fertile period which allows conception after HSG examination, in accordance with the SPO of PMC Hospital, the general time for performing HSG examination on days 9-11 calculated from the first day of the last menstruation (Jauhari A, Latifah, 2010). At that time, menstruation is usually over and the uterine mucous membrane is calm. If there is still bleeding, HSG should not be done because there is a possibility of contrast entering the blood vessels back to the uterus (Rasad, 2015). Patients are instructed to urinate before examination and patients are instructed not to have intercourse before examination, this is in accordance with Ballinger (Ballinger, 2003) The patient is asked to empty the bladder to prevent superimposition of the bladder. The patient is requested not to have sexual intercourse to prevent pregnancy (Bushong, 2013).

The amount of contrast media used is 7 cc with a ratio of 5 cc contrast media and 2 cc distilled water, it can see all parts of the tube but if the contrast media has not filled the tube then the doctor will add it, this is a difference with the SPO indicating the amount of contrast media as much as 10 cc but if 7 cc contrast can fill the uterus and both tubes then it does not need to be added (R. et Al, 2020). The amount of contrast media to be inserted varies depending on the doctor's preference (Muliasari, 2020).

This HSG examination without the use of AP photo plan in order to save examination time and minimize the radiation received by the patient (G. et Al., 2015). The projection of the examination only uses AP with the first stage of divided contrast injected as much as 3.5 cc followed by expose and the next 3.5 cc for the second expose. The first post-contrast AP exposure aims to see the contrast media has filled the uterus and the second post-contrast exposure aims to see the spill of contrast media has filled up to both tubes of the patient. This is reinforced by the informant's statement that inserting contrast media has hurt the patient, by inserting a little means that it has minimized the pain suffered by the patient. If 7 cc of contrast media is immediately given, the fear of spasm or cramps in the patient should be inserted slowly. The oblique projection is not used because using AP post contrast has filled both tubes so that it can make a diagnosis. According to Rasjidi (I., 2010), Examination projections performed in hysterosalpingography examination include AP photo plan aimed at classification of lytic lesions in the pelvis, AP post-contrast projection to see the uterus and oblique projection to see the right or left fallopian tube. According to Bontrager (Long, Bruce W. Smith, Barbara J. Rollins, 2016), HSG examination is performed using the main projection, AP, to view the uterine cavity and fallopian tubes, and additional projections, RPO or LPO, to view the anatomy depicted. According to Akintomide et al (2016), The contrast media insertion technique consists of two stages. The first stage is the insertion of 5 ml of contrast media using AP projection to show the contrast media filling the uterus. Then the insertion of 10-15 ml of contrast media using oblique projection to see the entire uterus, both tubes and peritoneum. Hysterosalpingography examination without using a photo plan and using only AP contrast projection is able to show that the spilled contrast media has filled the uterus to both tubes so that it can make a diagnosis.

CONCLUSION AND SUGGESTION

Hysterosalpingography examination in the Radiology intallation of Pekanbaru Medival Center Hospital, the injection of contrast media was carried out as much as 7 cc with a ratio of 5 cc contrast media and 2 cc aqua des. The injection of contrast media is done in two stages, the first stage is injected as much as 3.5 cc then expose and the next 3.5 cc for the second expose. The projection used is only AP projection post contrast can already diagnose without using AP photo plan and oblique projection. Oblique projection is used if the contrast media spill covers or does not reach the patient's tubal section. Preferably if with AP post-contrast projection the contrast medium has spread to all parts of the uterus and both tubes of the patient then there is no need to add oblique projections because it can already make a diagnosis.

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