

Explanation of Contrast-enhanced Computed Tomography (CT) /造影CT検査説明書

1. What is a CT scan?/CT検査について

A computerized tomography (CT) scan combines a series of X-ray images taken from different angles and uses computer processing to create cross-sectional images of the whole body. The entire procedure typically takes 30 minutes. Side effects from radiation are minimal in normal CT examinations. If you have any concerns, please consult your doctor.

/CTは、身体の周りからX線をあて、身体を通過したX線情報をコンピューターで解析し、全身の断層写真（輪切りの画像）を得る検査です。通常検査にかかる時間は30分程度です。通常の検査では放射線による影響は、ほとんどないと考えられています。心配な方は主治医にご相談してください。

2. What is an iodine contrast medium?/ヨード造影剤について

A dye known as an “iodinated contrast medium” is used for a CT scan

An iodinated contrast medium is a colorless, transparent, and slightly viscous liquid. After being injected into a vein, it is excreted in the urine through the kidneys within 1 day. The patterns of distribution and the excretion route can be used to diagnose diseases. Therefore, if your renal function is impaired, it may worsen, in addition to causing a slower excretion of the contrast medium. Careful attention is needed if your renal function is impaired.

/検査で使用するのは、『ヨード造影剤』という薬です。

ヨード造影剤は、無色透明で、やや粘りのある液体です。静脈から注入し、ほとんどが1日以内に腎臓から尿中に排泄されます。その分布の仕方や排せつ経路を利用して病気の診断を行います。したがって、腎臓の機能が低下している場合、排せつが遅くなるだけでなく腎臓の機能がさらに低下することがあります。腎機能低下がある場合は、慎重な対応が必要です。

3. Advantages of contrast-enhanced CT/造影剤を使用することによる利点

Using a contrast medium provides various advantages as described below, and it allows us to make a more accurate diagnosis from the images that are taken. For this reason, despite the risk of the occurrence of adverse reactions to the contrast medium, your doctor may recommend a contrast -enhanced CT if it is necessary for diagnosis.

/以下に述べるさまざまな利点があり、より正確な画像診断が可能となります。そのため副作用発生の可能性が高くなる場合でも、検査による診断が必要な場合、医師は造影検査を勧めることがあります。

- Provides detailed information about blood vessels (for the diagnosis of occlusion, stenosis, vascular malformation, or dissociation, etc., or the assessment of the relationship between the locations of tumors and blood vessels.)

/血管の詳しい情報を得ることができる（閉塞、狭窄、血管奇形、解離などの診断および腫瘍と血管の関係の把握）

- Provides information about blood flow in each organ (for the diagnosis of the areas of hemorrhaging and infarction, etc.)
/各種臓器の血流の情報を得ることができる（出血部位・梗塞の診断など）
- Help detect mass-forming diseases (e.g. tumors or abscesses) more easily.
/かたまりをつくる病気（腫瘍・膿瘍）などの検出が容易になる
- Useful to diagnose the characteristics of lesions. (e.g. differential diagnosis between a benign and malignant tumor, or that of a malignant tumor, angioma, and cyst, etc.)
/病変の性状の画像診断に有用である（腫瘍の良悪性の鑑別や悪性腫瘍・血管腫・嚢胞の鑑別など）
- Others/その他

4. Adverse reactions to contrast medium/造影剤の副作用

- Mild adverse reactions (incidence is less than 3% or less than 3 in approximately 100 patients)
/軽い副作用（発生頻度3%以下 約100人につき3人以下）
No special treatment is required in many mild cases such as nausea, vomiting, palpitations, headaches, itchiness, and rash
/吐き気・嘔吐・動悸・頭痛・かゆみ・発疹などで特に治療を要しないことが多い。
- Serious adverse reactions (incidence is around 0.004% or 1 in 25,000 patients)
/重い副作用（発生頻度0.004%程度 2.5万人につき1人）
Treatment may be required in cases such as difficulty breathing, disturbance of consciousness, or decreased blood pressure, and the condition may possibly cause aftereffects. Hospitalization or surgical treatment may possibly be required.
/呼吸困難・意識障害・血圧低下などは、治療が必要で、後遺症が残る可能性があります。入院や手術が必要な場合があります。
- 1 in approximately 330,000 patients (0.0003%) may die depending on his/her medical condition or constitution.
/病状・体質によっては約33万人に1人の割合（0.0003%）で死亡する場合があります。
- Approximately a 10-fold greater possibility of serious adverse reactions is reported for patients with a history of asthma, compared to those without it.
/喘息の既往がある場合はそうでない場合と比べて、重い副作用が起こる確率が約10倍高いと報告されています。
- Delayed adverse reactions including rashes and itchiness may rarely occur hours or days after the examination
/検査後数時間から数日経ってからも、発疹や痒みなどの遅発性副作用が起こる場合がごくまれにあります。
- You may experience a warm or flushed sensation or feel uncomfortable temporarily during or immediately after the actual injection of the contrast medium.
/造影剤注入中・注入直後に、身体が熱くなったり、一時的に気分が不快になることがあります。
- Even if you have not had an adverse reaction in the past, you could still have one.
/以前に造影剤を用いる検査を受け副作用のなかった方でも、副作用が起こる可能性があります。
- In combination with a contrast medium, the use of some drugs require special cautions. Tell your doctor if you are taking any of the following drugs.
/検査で造影剤を使用するときに、使用されている薬剤との併用の際注意すべき薬剤があります。下記薬剤を使用の方は、担当医師に知らせてください。

Biguanide anti-diabetes medicine/ビグアノイド系糖尿病薬

Beta blockers/ β 遮断薬

Anti-tumor drug, anti-bacterial drug/抗腫瘍薬、抗菌薬

Interleukin 2/インターロイキン-2

5. Withdrawal of biguanide anti-diabetic medicine/ビグアナイド系糖尿病薬の休薬について

In combination with a contrast medium, biguanide anti-diabetic medicine can induce stronger adverse reactions. We will therefore ask patients to stop taking such drugs for a specific length of time.

この薬は、造影剤と併用することにより副作用が増加する可能性があります。そのため、当院では、検査前後の一定期間服用を中止していただきます。

Brand name of biguanide anti-diabetic medicine/ビグアナイド系糖尿病薬の商品名
Metgluco tablets/メトグルコ錠
Metformin hydrochloride tablets (Sanwa, Towa, Nichi-Iko, Nipro, Pfizer, DSEP, JG, TCK, TE) /メトホルミン塩酸塩錠 (三和 トーワ 日医工 ニプロ ファイザー DSEP JG TCK TE)
Glycoran tablets/グリコラン錠
Nelbis tablets/ネルビス錠
Medet tablets/メデット錠
Metformin hydrochloride tablets (JG, Towa, SN) /メトホルミン塩酸塩錠 (JG トーワ SN)
METACT Combination Tablets LD/メタクト配合錠LD
METACT Combination Tablets HD/メタクト配合錠HD
EquMet Combination Tablets LD/エクメット配合錠LD
EquMet Combination Tablets HD/エクメット配合錠HD
INISYNC combination tablets/イニシンク配合錠
DIBETOS tablets/ジベトス錠
DIBETON S enteric coated tablets/ジベトンS腸溶錠

6. Before the examination/検査を受ける前に

If you have a pacemaker or an Implantable Cardioverter Defibrillator (ICD), please be sure to bring your “Pacemaker Identification Book” or “ICD Identification Book” on the day of the examination. A CT scan may interfere with certain types of pacemakers or ICDs. A staff member in the CT room will check the pacemaker or ICD type written in your “Pacemaker Identification Book” or “ICD Identification Book” in order to perform the examination safely.

If you are pregnant or there is a possibility that you are pregnant, please inform the doctor or staff before the CT scan. This is to protect the fetus from radiation exposure.

心臓ペースメーカーやICD【埋め込み型除細動器】等を体内に埋め込まれている方は、検査当日、必ず「ペースメーカー手帳」「ICD手帳」を持参してください。ペースメーカーやICDの中にはCTによって不具合が生じる可能性のあるものがあります。CTスタッフが手帳で確認し、安全に検査できるよう対応します。

妊娠している可能性がある方、または妊娠している方は検査前に担当医またはスタッフに申し出て下さい。胎児をCTによる放射線被爆から守るためです。

7. Procedures and precautions for the examination/検査の実際および検査を受ける際の注意点

1) Preparation for the examination/検査前の準備

You may be asked to remove all clothing or underwear with metallic materials and precious metals because they can interfere with the clarity of the CT scan images.

/金属は検査の妨げになる場合があるので、金属のついた服や下着、貴金属などを外していただく場合があります。

2) During the CT scan/検査中

You will be asked to lie on a table during the CT scanning. Please relax and lie on your back.

/検査は、検査台に仰向けに寝た状態で行います。体の力を抜いてリラックスしてください。

The technologist may ask you to hold your breath for about 20 seconds.

/検査中に20秒程度呼吸を止めてもらうことがあります。

You will be able to communicate with the technologist via intercom at any time during the exam.

/検査中はマイクを通して検査担当者といつでも会話できます。

* Your doctor, a radiology technician and a nurse will constantly monitor your condition during the examination so that immediate action can be taken if some kind of abnormality occurs.

/造影検査中は、医師、放射線技師、看護師が常に観察し、異常が現れた場合すぐに対処できるようにしています。

* During the injection of the contrast medium, you may feel warm. You do not need to be concerned because this is a normal reaction, and not an adverse reaction. The degree of warmth varies depending on the speed of the injection.

/造影剤注入中は体が暖かくなることがあります。これは通常の反応で副作用ではなく心配する必要はありません。また、暖かさの程度は注入速度によって変化します。

* If the contrast medium has been injected forcefully, it may leak from the blood vessel. The injection site may present with swelling and be accompanied by pain. Even if such leakage occurs, it will be absorbed by the body over time, so you do not need to worry. If the leakage is massive, however, treatment may be necessary.

/造影剤は勢いよく注入するので、血管から漏れることがあります。この場合には注射した部位が腫れて、痛みを伴うこともあります。漏れたとしても、通常は時間とともに吸収されるので心配ありませんが、漏れた量が非常に多い場合には別の処置が必要となることもあります。

Keep your arm as still as possible during the examination. /検査中はできるだけ腕を動かさないでください。

3) After the examination/検査後

You are advised to take more fluids (water, tea, juice, etc.) than usual to help excrete the contrast medium from the body and maintain kidney function. The contrast medium will be excreted by the kidneys into the urine. There are no dietary restrictions.

The doctor will explain the results to you at a later date.

/造影剤を体から排泄し、腎臓の機能を保持するために、水分（水・茶・ジュース等）をいつもより多く摂るようにしてください。造影剤は腎臓から尿中に排泄されます。食事について、制限はありません。

検査結果については医師が後日説明します。

8. Advantages and disadvantages of a contrast-enhanced CT scan/造影CT検査の利益と不利益

Using the information provided by the contrast-enhanced CT, we can possibly provide more appropriate treatment to the patient. However, there are some disadvantages: inability to obtain useful information from the examination, radiation exposure related to CT, and the possible occurrence of adverse events such as described above.

/造影検査により得られる情報により、あなたにとってより適切な診療が行える可能性があります。一方、不利益としては、この検査を受けても適切な情報が得られない、検査に伴う放射線被爆、また、前述の有害事象に遭遇する可能性があげられます。

9. Withdrawal of consent form/同意書の撤回について

The patient or a representative can withdraw consent at any time after consenting to the examination.

/患者または代理人は、検査を受けることを同意した後、いかなる場合でも同意の撤回ができます。

CT Scans — Explanation of Medical Radiation ExposureCT検査 医療被ばくに関する説明書○ **Necessity of examination (Justification)**

Since Computer Tomography tests use radiation, there is minimal exposure to radiation. However, considering the test is essential for the detection and treatment of diseases, and the risks associated without undergoing the test. Furthermore, testing is performed only when the needs for testing is considered to outweigh the risk of exposure.

Optimization Dose:

We conduct examinations under optimal conditions based on the laws and regulations and guidelines of relevant academic societies at our hospital, and minimize exposure to radiation as necessary is practiced.

○ **Exposure Dose:**

X-rays administered during a CT scan typically range from 5 to 30 millisieverts, however it varies depending on the site and method of examination and may be administered more than that. It is generally considered that there is no significant effect from exposure under 100 millisieverts. Regarding the risk of developing cancer, it is said to be indistinguishable from that caused by factors other than radiation, such as diet and stress. *mSv: Dose units to evaluate the effects of radiation exposure on human bodies

For a person weighing 50-70 kg

Site of CT scans	Estimated Exposure Dose in our hospital (Gy)	DRLs in 2020 FY (Gy) *
Head	1.9	2.8
Chest	3.6	7.1
Abdomen (from liver to pelvic)	8.5	13.2
Thoracoabdominal CT (from chest to pelvic)	11.2	18
Thoracoabdominal CT (with/ without Contrast)	32.8	-
Abdominal Dynamic CT with Contrast	24.1	31.5
Cerebrovascular	7.7	-
Arteries of the lower limbs (from abdomen to feet)	32.5	-
Coronary arteries	9	19.5
Head at age of 1-5 years old	0.9	1.4

* Gy: Unit indicating the amount of energy received from radiation

*DRLs: Reference values that serve as guidelines for managing medical radiation exposure.

If you'd like more detailed information on medical radiation, please contact us during weekdays in the following operating hours.

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Operation Hours: 08:00-16:30