

# 心導管/冠狀動脈攝影檢查及介入性治療(英文)

## Cardiac Catheterization/Coronary Computed Tomography Angiogram and Interventional Cardiology

### 一、為什麼要做心導管檢查？

#### Why is cardiac catheterization necessary?

若心臟血管發生粥狀硬化導致血管狹窄阻塞，使血液流量減少或不足，造成局部心肌的缺血，而引起一連串的臨床症狀（如胸悶、心絞痛等）時，則需行心導管攝影來檢查供給心臟血液的冠狀動脈，若必要時進行治療。

In case of reduced or insufficient blood flow due to of blood vessel stenosis or blockage resulted from atherosclerosis in cardiac vessels, which results in focal myocardial ischemia and further clinical symptoms (such as chest distress and angina pectoris), cardiac angiography is required to assess the coronary arteries supplying blood to the heart, treatment is performed if appropriate.

### 二、心導管檢查是怎麼進行？

#### How to perform cardiac catheterization?

心導管檢查採局部麻醉的方式從手腕（橈動脈）或鼠蹊部（股動脈）執行。過程中會藉由 X 光的導引，將導管經由皮膚伸入動脈再慢慢推送到心臟血管，藉由注射顯影劑查看出血管血流阻塞程度及心臟血管病變等。醫生會根據檢查結果評估血管阻塞程度，並視情況評估是否做進一步介入性治療，如行氣球擴張術或置放支架。

Cardiac catheterization is performed with local anesthesia through the wrist (radial artery) or groin (femoral artery). The procedure is guided by X-ray to percutaneously insert the catheter into the artery and slowly push into the cardiac vessels, detecting the degrees of vessel flow blockage and pathology from cardiac vessels by injecting contrasts. The physician assesses the blockage condition based on examination result and considers further interventional treatment as required, e.g. performing balloon angioplasty or stent placement.

### 三、檢查「前」該做哪些準備？

#### Which preparations are required “before” the examination?

- (一) 辦理住院手續後，護理師會為您量身高、體重、體溫、脈搏、呼吸、血壓，並協助您施打靜脈留置針及抽血、給您手術衣等。

After completing the admission procedure, the nurse will measure

height, weight, body temperature, pulse, breath, and blood pressure for you, assisting to place venous indwelling needles, performing blood drawing and providing you with a gown, etc.

- (二) 醫師會為您做身體檢查，詢問個人及家族病史及特殊病史、有無藥物過敏及目前藥物使用情形與有關心臟疾病的症狀（可能或確定懷孕者者須主動告知醫護人員）。

The physician will perform physical examination for you, inquiring personal and family medical history and specific history, any drug allergy and current medications, as well as symptoms related to heart diseases (Those who are probably or definitely pregnant need to voluntarily inform medical personnel).

- (三) 勤務員會帶您去照胸部 X 光片及心電圖檢查。

You will be accompanied by duty staff to receive chest X-ray and EKG.

- (四) 為您檢查的醫師會向您說明心導管檢查或經皮冠狀動脈氣球擴張術的流程、注意事項，並給您檢查同意書，有任何疑問，請立即向醫師反映。

The physician performing examination will explain for you the procedures and precautions regarding cardiac catheterization or percutaneous coronary balloon angioplasty, providing the examination consent to you; please immediately inform the physician in case of any questions.

- (五) 如有過敏體質、曾經對顯影劑過敏或曾有出血情形且困難止血之經驗，請務必事先告知醫師。

Please be sure to inform the physician in advance in case of any allergic constitution, ever allergic to any contrasts or experiencing bleeding with difficulty to be staunched.

- (六) 請詳讀檢查同意書內容，無疑問後，填寫背後資料並簽名，完成後再交還給護理師。

Please carefully read content in the examination consent, filling out the information required as shown on the reverse side, signing it when there is no any problems, returning it to the nurse after completion.

- (七) 心臟內科總醫師排定檢查時間後，護理師會告知您禁食的時間，一般禁食 4~8 小時，若檢查時間為次日上午，請您午夜 12 點後開始禁食（含食物、飲料及水），但藥物部分，除降血糖藥物之外皆可服用；若檢查時間為次日下午，則請您次日早餐及服藥過後開始禁食，直至檢查結束前請勿再喝水及進食任何食物。

After examination schedule has been finalized by the chief resident from Cardiology Department, the nurse will inform you of fasting time which is normally 4 to 8 hours, for examination scheduled in the following morning, please start your fast after 12:00 midnight (including food, drinks and water), but all medications may be taken as usual except hypoglycemic drugs; for examination scheduled in the following afternoon, please start your fast after having your breakfast and medications in the following morning, please do not drink any additional water or have any other food before the examination completed.

- (八) 為了預防檢查穿刺部位的感染，護理師或工作人員會為您剔除鼠蹊部及會陰部附近的毛髮。

To prevent any infection from puncture site during the examination, the nurse or assistant will shave the hair around groin region and the perineum for you.

#### 四、檢查「當天」要注意什麼!

##### Which precautions should be noticed “the same day” of the examination?

- (一) 早上請先換上手術衣，穿著方式如右圖，並由醫護人員為您接上點滴。

Please first change your gown in the morning as shown in the right figure, receiving drip infusion provided by medical personnel.



衣領朝前  
Forward collar

- (二) 移除身上的眼鏡、內衣褲、活動式假牙、戒指、手錶、項鍊及髮夾等金屬及隨身用品。

Remove glasses, underwear, removable denture, metal objects such as ring, watch, necklace and hair pin, as well as all personal belongings.



綁線朝後  
Backward binding ropes

- (三) 耐心等待心導管室通知護理站送檢，由於檢查中不能移動身體，因此當護理師通知您將接受檢查時，請您先至廁所解小便、排空膀胱，完成後於床上躺好靜待勤務員推床送您至心導管室即可。

Please patiently await the nurse station to receive a notice from cardiac catheterization room for the examination; as you may not move during the examination, please get to the toilet for urination and emptying the bladder upon the nurse informing you to receive the

examination soon, after that, you will just have to lie on the bed and await the duty staff to move your bed into the cardiac catheterization room.

- (四) 排程輪到您時，請您放輕鬆並配合醫師的指示以利進行檢查。依病情所需，醫師會視情況與家屬討論進一步的治療方式，如放置支架、氣球擴張等，所以務必有一位以上的家屬在心導管室外陪伴。

On your turn, please relax and comply with physician's instructions for smoothly receiving the examination. Based on various illness conditions, the physician will discuss with the family further approach of intervention as required, such as performing stent placement or balloon angioplasty, etc., thus there should be at least one family member accompanied outside the cardiac catheterization room.

- (五) 檢查所需時間視病人狀況不同而有所差異，一般約 1~3 小時不等，所以煩請家屬在心導管室外耐心等待。

The varied examination time depends on patient's individual condition which normally takes 1 to 3 hours, the family should patiently await outside the cardiac catheterization room.

## 五、何謂血管支架？

### What are vascular stents?

血管支架是極精細合金網狀管狀物，壓縮附著於氣球導管上，經由引導管及導線，送到冠狀動脈病灶處，再藉由氣球擴張使血管支架留在血管裡，可減少血管管壁回縮或血管剝離，以保持血流通暢。

A vascular stent is an extremely sophisticated meshed alloy tube compressed and attached on a balloon catheter, which is delivered to the coronary lesion through the inducer and tubing, the vascular stent is further left in the blood vessel through balloon-expanding to minimize the restenosis of vessel wall or artery dissection, keeping the unobstructed blood flow.

## 六、血管支架種類介紹

## Types of vascular stent

分類 Type	一般傳統支架 Conventional stent	塗藥支架 Drug-eluting stent	全吸收式生物血管模架 Bioresorbable vascular scaffold
特性 Features	金屬製成之網狀未塗藥支撐物，材質以合金或不銹鋼最常見。 A meshed non-drug-eluting support made of metals, common materials including alloy or stainless steel.	金屬製成之網狀支撐物，表面塗有防止細胞與組織增生的藥物，材質以合金與不銹鋼最常見。 A meshed support made of metals coated with drugs on the surface to prevent cell and tissue proliferation, common materials including alloy or stainless steel.	高分子聚合物製成之非金屬網狀支撐物，表面塗有防止細胞與組織增生藥物。 A non-metal meshed support made of polymers and coated with drugs on the surface to prevent cell and tissue proliferation.
作用 Effects	放入血管病灶處撐開，保持血流通暢。 Placed to the coronary lesion for expanding, keeping the unobstructed blood flow.	放入血管病灶處撐開，保持血流通暢，緩慢滲入釋放防止細胞組織增生藥物，降低支架內再狹窄的機率。 Placed to the coronary lesion for expanding to keep the unobstructed blood flow, slowly penetrating and releasing drugs to prevent cell and tissue proliferation, reducing the probability of in-stent restenosis.	高分子聚合物製成之非金屬網狀支撐物，表面塗有防止細胞與組織增生藥物。 A non-metal meshed support made of polymers and coated with drugs on the surface to prevent cell and tissue proliferation.
副作用 Side effects	支架內血栓約 0.5~1%。 Blood clot blocked in the stent, about 0.5 to 1%.	支架內血栓約 0.5~1%。 Blood clot blocked in the stent, about 0.5 to 1%.	前述心導管支架置放術相關之副作用或併發症，裝置全吸收式生物血管模架時均可能發生。 Placement of bioresorbable vascular scaffold may still exhibit the above-mentioned side effects or complications from coronary stent placement.
	半年內支架部位再狹窄約 30~40%。 Restenosis of the stent-site within 6 months, about 30 to 40%.	半年內支架部位再狹窄約 3~5%。 Restenosis of the stent-site within 6 months, about 3 to 5%.	
	分支血管阻塞約 5%。 Side-branch occlusion, about 5%.	分支血管阻塞約 5%。 Side-branch occlusion, about 5%.	
	血管破裂約 0.5~1%。 Vessel rupture, about 0.5 to 1%.	血管破裂約 0.5~1%。 Vessel rupture, about 0.5 to 1%.	
	支架感染併心內膜炎(罕見<0.5%)。	支架感染併心內膜炎(罕見<0.5%)。	

	<p>Combined infective endocarditis from stent (Rare, &lt;0.5%).</p> <p>支架移位(罕見&lt;0.5%)。 Displacement of the stent (Rare, &lt;0.5%).</p> <p>死亡(非導管相關死亡率&lt;0.5%)。 Death (Non-catheterization-related mortality &lt;0.5%).</p>	<p>Combined infective endocarditis from stent (Rare, &lt;0.5%).</p> <p>支架移位(罕見&lt;0.5%)。 Displacement of the stent (Rare, &lt;0.5%).</p> <p>死亡(非導管相關死亡率&lt;0.5%)。 Death (Non-catheterization-related mortality &lt;0.5%).</p>	
<p>禁忌症 Contraindications</p>	<p>對血小板抑制劑和/或抗凝血劑禁忌者。 Patients who cannot receive antiplatelet and/or anticoagulant therapy.</p>	<p>已知對支架塗藥過敏者。 Known to be with hypersensitivity to coating drugs of the stent.</p>	<p>對血小板抑制劑或抗凝血劑禁忌者。 Patients who cannot receive antiplatelet or anticoagulant therapy.</p>
	<p>病變部位不適合裝置支架或裝置風險太高。 With lesions that are inappropriate for stent placement or exhibiting much higher risks.</p>	<p>對血小板抑制劑和/或抗凝血劑禁忌者。 Patients who cannot receive antiplatelet and/or anticoagulant therapy.</p>	
	<p>其他情況醫師認為不適合執行支架手術者。 Other conditions that the physician believed not suitable to perform stent placement.</p>	<p>病變部位不適合裝置支架或裝置風險太高。 With lesions that are inappropriate for stent placement or exhibiting much higher risks.</p>	
		<p>其他情況醫師認為不適合執行支架手術者。 Other conditions that the physician believed not suitable to perform stent placement.</p>	
<p>注意事項</p>	<p>裝置血管支架後避免支架內血栓應至少服用兩種抗血小板藥物1個月以上。 To prevent blood clot blocked in the stent, at least two antiplatelet drugs should be taken</p>	<p>裝置血管支架後避免支架內血栓應至少服用兩種抗血小板藥物6個月以上。 To prevent blood clot blocked in the stent, at least two antiplatelet drugs should be taken for more than 6 months after stent</p>	<p>即使全吸收式生物血管模架二年之後幾乎完全吸收、一般建議應至少服用兩種抗血小板藥物半年以上，甚至更久。 Even though the bioresorbable vascular scaffold may almost</p>

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	for more than 1 month after stent placement.	placement.	completely be resorbed two years after placement, at least two antiplatelet drugs are generally recommended to be taken for more than 6 months or even longer.
	<p>裝置血管支架後的血管仍有可能再狹窄或狹窄，所以必須定期服藥追蹤。</p> <p>The vessels with stent placement may still exhibit restenosis or narrowing, regularly taking medications and follow-up are imperative.</p>	<p>裝置血管支架後的血管仍有可能再狹窄或狹窄，所以必須定期服藥追蹤。</p> <p>The vessels with stent placement may still exhibit restenosis or narrowing, regularly taking medications and follow-up are imperative.</p>	<p>裝置全吸收式生物血管模架並非一勞永逸，裝置後仍必須定時服藥追蹤。</p> <p>Placement of bioresorbable vascular scaffold cannot be received once and for all, regularly taking medications and follow-up are still imperative after placement.</p>

七、檢查「後」要注意什麼事？

**Which precautions should be noticed “after” the examination?**

檢查部位 Examination site	經橈動脈（手腕） Via radial artery (wrist)	經股動脈（鼠蹊部）	
		無管鞘留置 Without casing tube retained	有管鞘留置 With casing tube retained
加壓止血 Hemostatic compression	<p>穿刺部位會使用加壓止血板，醫師會視情況決定加壓與移除時間，通常約 2~6 小時左右，止血貼片移除前，手腕需保持平直且不可彎曲，並且持續做抓握運動，促進手部末梢血液循環。</p> <p>A hemostatic compression plate may be applied to the puncture site, the physician will decide the time for compression and removal depending on the condition which is normally 2 to 6 hours, the wrist will be</p>	<p>穿刺部位會有約 2 公斤重之砂袋加壓止血至少 6 小時，需保持平直且不可彎曲。</p> <p>There will be a sandbag hemostatic compression of about 2 kg applied on puncture site for at least 6 hours, and it is required to remain straight avoiding any flexion.</p>	<p>6 小時後醫師會為您評估凝血功能，待回復正常值後，才能拔除管鞘，止血方式需再砂袋加壓至少 6 小時(同左)。</p> <p>The physician will assess your coagulation function after 6 hours, the casing tube may not be removed before returning to normal level, for hemostatic approach, an additional sandbag hemostatic</p>

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檢查部位 Examination site	經桡動脈 (手腕) Via radial artery (wrist)	經股動脈 (鼠蹊部)	
		無管鞘留置 Without casing tube retained	有管鞘留置 With casing tube retained
	required to remain straight avoiding any flexion before removal of hemostasis patch, continuously doing finger gripping exercises to facilitate peripheral blood circulation of the hand.		compression shall be required for at least 6 hours (same as the left).
飲食 Diet	可正常飲食，建議多喝水，以利排除體內的顯影劑；但若有心臟衰竭或長期洗腎者請遵從醫師的指示。 Keep the diet as usual, drinking more water is recommended to facilitate excretion of contrast from the body; but those who with cardiac failure or long-term dialysis should comply with physician's instructions.	同左。 Same as the left.	
活動 Movement	術後 2 小時無不適即可採漸進式下床如廁。穿刺肢體末端可做輕抓握活動至拆除止血板，以減輕麻木不適，另避免過度出力或提重物，勿做內旋、外旋或以手撐床等動作，其餘關節可適度活動。 Gradually getting out of the bed for toilet will be allowed in case of no any discomfort experienced 2 hours after the procedure. Mild gripping exercises may be performed for tip of the punctured limb to relieve the numbness and discomfort before removal of hemostatic plate. Furthermore, avoid excessive exertion or lifting heavy objects, avoiding any movement such as internal rotation, external rotation or propping the bed up with	絕對臥床休息且床頭需低於 30 度至加壓止血結束，檢查後當天儘可能臥床休息，故如廁時須床上使用尿壺或便盆，並避免用力解便。 Unconditional bedridden rest is necessary in less than 30 degrees of bedhead before hemostatic compression completed, taking a bedridden rest as long as possible on the same day after examination. Therefore, it will be necessary to use a urinal or commode chair when getting to	絕對臥床休息且需平躺床頭不可搖高，並且該肢體絕對禁止彎曲至管鞘移除，故如廁時須床上使用尿壺或便盆，並避免用力解便。 Unconditional bedridden rest is necessary, and it is required to lie in supine position <b>without turning bedhead higher</b> , absolutely prohibited to flex the relevant limb before removal of casing tube. Therefore, it will be necessary to use a urinal or commode chair when getting to the toilet is required, avoiding much exertion when defecating.

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檢查部位 Examination site	經橈動脈 (手腕) Via radial artery (wrist)	經股動脈 (鼠蹊部)	
		無管鞘留置 Without casing tube retained	有管鞘留置 With casing tube retained
	hands, appropriate movements are allowed for other joints.	the toilet is required, avoiding much exertion when defecating.	

## (一) 傷口照護：

## Wound care:

1. 出院前醫師會再次為您換藥，傷口請保持清潔和乾燥，避免碰水。

The physician will perform dressing change again for you prior to your discharge, please keep the wound clean and dry, avoiding any contact with water.

2. 出院後一星期內，為避免穿刺傷口感染，可以淋浴代替盆浴。

Within one week after discharge, it is recommended to take a shower instead of bath in a tub to prevent any infection from the puncture wound.

3. 導管穿刺部位若有瘀青或血腫，顏色會隨時間逐漸變淡，約 1~2 個星期內會被身體組織吸收。若瘀青或血腫情形逐漸變大或出現分泌物、發紅、熱、痛等感染症狀時，請儘速回診。

For any bruise or hematoma from the puncture site, the color should be gradually lightened and absorbed by body tissues within 1 or 2 weeks. In case of gradually enlarged bruise or hematoma or exhibiting infectious symptoms such as secretion, redness, heat or pain, please immediately return to the hospital.

## (二) 用藥：

## Medications:

1. 請依照醫師指示服用藥物，勿擅自加藥或停藥。

Please take the medications according to the physician's instructions, do not voluntarily take any other medications or withdraw the drugs.

2. 有放置支架者，通常需服用抗凝血藥物約 3~6 個月或長達一年，此類藥物可能造成腸胃不適，最好在餐後服用。

For patients who received stent placement, it will be required to take anticoagulants for about 3 to 6 months or as long as one year,

preferably taking such drugs after meals to avoid any gastrointestinal discomfort.

3. 若出現不適情形，如頭痛、不尋常出血、紫斑、血便或黑便等，須立即告知醫師。

In case of any discomfort such as headache, unusual bleeding, purple plague, bloody stool or tarry stool, immediately notify the physician.

(三) 其他注意事項：

Other precautions:

1. 避免過度出力或提重物，或作閉氣用力的動作（如用力解便）。

Avoid excessive exertion or lifting heavy objects, or any movement with Valsalva maneuver (e.g. defecating with exertion).

2. 若有任何不適，如胸悶、胸痛、心悸、小便難解、穿刺部位有麻木疼痛、溫濕感、肢體無力等情形，請立即通知醫護人員。

In case of any discomfort such as chest distress, chest pain, palpitation, difficulty in urination, numbness, pain or warm and wet sensation with the puncture site and limb weakness, please immediately inform medical personnel.

(四) 返家照顧：

Home care:

3. 出院後請依照醫師排定時間定期回門診追蹤檢查。

Please regularly receive follow-up outpatient examinations after discharge according to the schedule arranged by the physician.

4. 做完心導管兩天後可淋浴，但勿盆浴或游泳，直到傷口完全癒合為止。

Taking a shower is allowed two days after cardiac catheterization completed, nevertheless, taking a tub bath or swimming is prohibited before the wound is completely healed over.

5. 一週內請勿提重物。

Please do not lift heavy objects within one week.

6. 建議攝取高纖食物，避免高膽固醇、高脂肪、高鹽/鈉及醃製食品，並請勿暴飲暴食。

It is recommended to ingest high fiber food, avoiding food rich in cholesterol, fat, salt/sodium and pickled food, please also avoid overeating.

7. 若出現胸悶、噁心嘔吐、冒冷汗或導管穿刺部位出現疼痛加劇、麻木、無力、冰冷及出血或血腫擴大的情形，請立刻就醫，不需等到回診時間。

In case of chest distress, nausea and vomiting, cold sweats or any worsened pain, numbness, weakness, coldness and bleeding or enlarged hematoma from the puncture site, please immediately seek medical attention disregarding the follow-up revisit schedule.

### 參考資料 Reference

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### 護理指導評值 Nursing guidance evaluation:

#### ◎是非題 True or false

1. ( ) 心導管/冠狀動脈攝影檢查「後」穿刺部位會加壓止血，加壓時間通常約 2~6 小時左右？

Hemostatic compression will be applied to the puncture site "after" cardiac catheterization/coronary computed tomography angiogram, the time for compression is normally 2 to 6 hours?

2. ( ) 出院後可以使用盆浴？

Taking a tub bath is acceptable after discharge?

3. ( ) 若瘀青或血腫情形逐漸變大或出現分泌物、發紅、熱、痛等感染症狀時，應儘速回診？

In case of gradually enlarged bruise or hematoma or exhibiting infectious symptoms such as secretion, redness, heat or pain, immediately return to the hospital?

#### ◎選擇題 Multiple choice questions

4. ( ) 心導管/冠狀動脈攝影檢查「前」會做哪些準備？

(1) 量身高、體重、體溫、脈搏、呼吸、血壓，並施打靜脈留置針及抽血。

- (2) 詢問個人及家族病史及特殊病史、有無藥物過敏及目前藥物使用情形與有關心臟疾病的症狀。
- (3) 有過敏體質、曾經對顯影劑過敏或曾有出血情形且困難止血之經驗，請務必事先告知醫師。
- (4) 一般禁食 4~8 小時。
- (5) 以上皆是。

What are the preparations “before” receiving cardiac catheterization/coronary computed tomography angiogram?

- (1) Measuring height, weight, body temperature, pulse, breath, and blood pressure, as well as placing venous indwelling needles and performing blood drawing.
- (2) Inquiring personal and family medical history and specific history, any drug allergy and current medications, as well as symptoms related to heart diseases.
- (3) Please be sure to notify the physician in advance in case of any allergic constitution, ever allergic to any contrasts or experiencing bleeding with difficulty to be staunched.
- (4) Normally performing a fast time of 4 to 8 hours.
- (5) All of the above

5. ( ) 下列何者不是有管鞘留置時心導管/冠狀動脈攝影檢查「後」注意事項?

- (1) 術後無不適即可採漸進式下床如廁
- (2) 絕對臥床休息且需平躺床頭不可搖高
- (3) 肢體絕對禁止彎曲至管鞘移除
- (4) 如廁時須床上使用尿壺或便盆，並避免用力解便。

Which of the follows are **not** precautions “after” receiving cardiac catheterization/coronary computed tomography angiogram with indwelling casing tube?

- (1) Gradually getting out of the bed for toilet will be acceptable in case of no any discomfort experienced after the procedure.
- (2) Unconditional bedridden rest is necessary, and it is required to lie in supine position without turning bedhead higher.
- (3) Absolutely prohibited to flex the relevant limb before removal of casing tube.
- (4) Use a urinal or commode chair when getting to the toilet is required, avoiding much exertion when defecating.

6. ( ) 下列何者不是經橈動脈(手腕)心導管/冠狀動脈攝影檢查「後」注意事項?

- (1) 絕對臥床休息且需平躺床頭不可搖高
- (2) 穿刺肢體末端可做輕抓握活動至拆除止血板
- (3) 避免過度出力或提重物
- (4) 勿做內旋、外旋或以手撐床等動作。

Which of the follows are **not** precautions “after” receiving via radial artery (wrist) cardiac catheterization/coronary computed tomography angiogram?

- (1) Unconditional bedridden rest is necessary, and it is required to lie in supine position without turning bedhead higher.
- (2) Mild gripping movement may be performed for tip of the punctured limb to before removal of hemostatic plate.
- (3) Avoid excessive exertion or lifting heavy objects.
- (4) Avoiding any movement such as internal rotation, external rotation or propping the bed up with hands.

(答對 5-6 題⇒完全了解；答對 3-4 題⇒部分了解；答對 1-2 題⇒完全不瞭解)  
 (Correct in 5 or 6 questions ⇒ completely understood; correct in 3 or 4 questions ⇒ partially understood; correct in 1 or 2 questions ⇒ not understood at all)

1. (O) 2. (X) 3. (O) 4. (5) 5. (1) 6. (1)

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