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Case Report

Angle-tipped guidewire-induced vascular perforation at branch of superior thoracic artery during sheath insertion: Case report

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ABSTRACT

An 84-year-old woman was admitted to our hospital because of congestive heart failure, rapid atrial fibrillation, and ischemic heart disease. Percutaneous coronary intervention (PCI) via the left radial artery was performed, and a stent was deployed successfully into left anterior descending coronary artery (LAD). She got into shock state one hour after PCI. Chest X-ray and computed tomography scan revealed increase of soft tissue around the left axilla and implied the existence of hematoma. Hemoglobin level decreased from 13.3 g/dL to 8.2 g/dL and hemorrhagic shock was suspected. Angiography of the left axillary artery demonstrated contrast extravasation, and selective angiography using a micro-catheter identified bleeding from a branch of the superior thoracic artery. Hemostasis was performed successfully by embolization using a gelatin sponge, and improvement of the general condition was obtained. Aberration of 0.025-in. angle tipped guidewire was considered to induce arterial perforation during sheath insertion.

<**Learning objective:** Guidewire-induced perforation is a known rare and sometimes fatal complication of percutaneous interventional procedures. The incidence of angiographic-evident peripheral artery perforation has been reported to be 0.9%. In particular, a guidewire advanced into a small branch artery can potentially cause perforation. This risk suggests that clinicians should use caution when manipulating a guidewire during sheath insertion.>

Introduction

Unexpected complications can occur during percutaneous coronary intervention (PCI) although techniques and equipment have advanced. Several reports indicated that forceful manipulation of the guidewire and catheters may also result in iatrogenic radial artery perforations [1], however, there are few reports about guidewire-induced vascular perforation at more proximal artery during sheath insertion. In particular, 0.025-in. angle-tipped guidewire advanced into a small branch artery can potentially cause vascular perforation. We present our experience of perforation at the branch of superior thoracic artery and discuss the prevention and management of this rare complication.

Case report

An 84-year-old woman was admitted to our hospital because of congestive heart failure and rapid atrial fibrillation. After her heart failure had improved, coronary computed tomography angiography revealed severe stenosis in the mid-portion of the left anterior descending coronary artery (LAD). Her coronary risk factors included hypertension and dyslipidemia.

After administration of aspirin, clopidogrel sulfate, and rivaroxaban, PCI was performed through a left radial artery (LRA) approach. A 6Fr radial sheath (Radifocus® introducer , Terumo, Tokyo, Japan) was inserted in the LRA and 6000 Units of unfractionated heparin were given through the sheath. During the PCI procedure, left coronary artery was engaged with 6Fr guiding catheter (EBU-3.5 Launcher, Medtronic, Dublin, Ireland) through the right femoral approach and the lesion was crossed with 0.014″ × 190 cm guidewire (ASAHI SION, ASAHI INTECC, Nagoya, Japan). A 2.25/23-mm CoCr-everolimus-eluting stent (CoCr-EES, Boston Scientific Corporation, Natick, MA, USA) was deployed into

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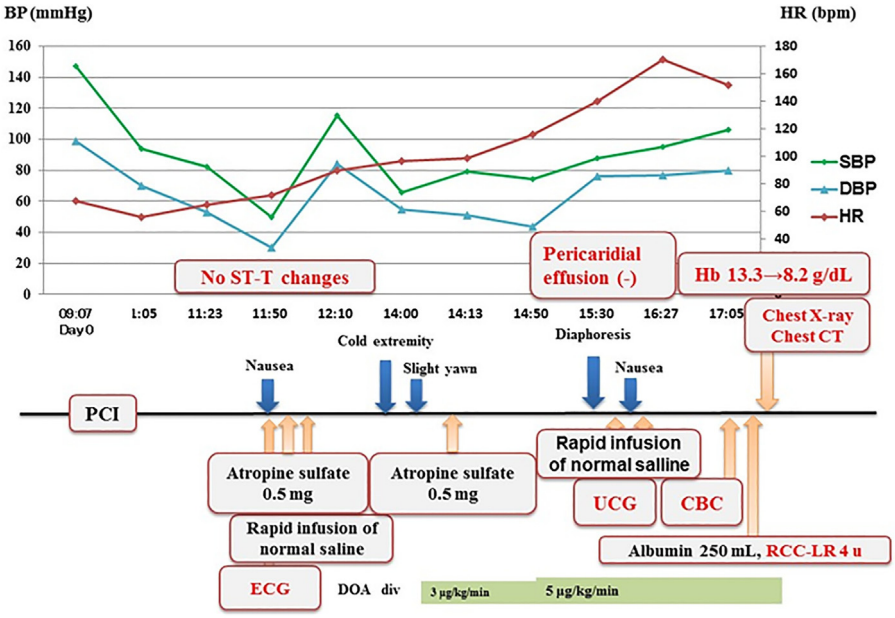

Fig. 1. Clinical course after PCI.
PCI, percutaneous coronary intervention; BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rate; Hb, hemoglobin; CT, computed tomography; ECG, electrocardiogram; UCG; ultrasound cardiography; CBC, complete blood count; RCC-LR, red cell concentrates-leukocytes reduced.

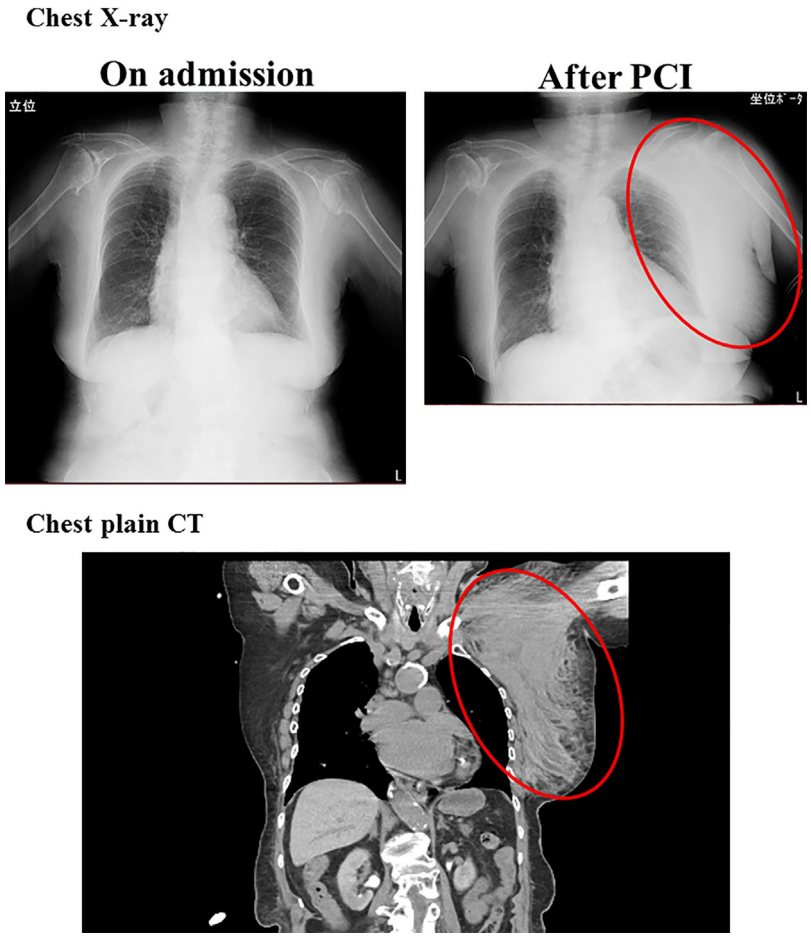

Fig. 2. Chest X-ray and plain CT findings.
PCI, percutaneous coronary intervention; CT, computed tomography.