Misuse of vascular dilators during the placement of central venous catheters has been infrequently reported and can lead to devastating intrathoracic hemorrhage and death” Collier (2019).

Abstract:

BACKGROUND: Misuse of vascular dilators during the placement of central venous catheters has been infrequently reported and can lead to devastating intrathoracic hemorrhage and death. These injuries should be preventable in most cases. If a major intrathoracic vascular injury is recognized intraoperatively, less invasive treatment options are available to minimize the consequences.

METHODS: The records of 20 patients who suffered 21 major vascular injuries during insertion of central venous catheters, ports, or dialysis catheters and resulted in malpractice claims over the course of 8 years were analyzed to determine the mechanism of injury, the timing of diagnosis, and how these injuries were treated. How the injury could have been prevented, why earlier diagnosis was not made, and what treatment options were possible were also examined.

RESULTS: Twelve women and eight men were documented to have sustained intrathoracic major venous injuries during catheter insertions. There were five injuries to the superior vena cava, six to the right innominate vein, and 10 to the left innominate vein. All procedures were done using fluoroscopic guidance, and resistance to passage of the dilators was documented in eight cases. In most cases, the operator reported inserting the dilators to their maximum length. In four cases, the catheter could be seen intraoperatively in the thoracic cavity. Bleeding was diagnosed in the operating room in 11 cases, in the postanesthesia care unit in seven cases, and on postoperative days 2 and 5 after misplaced catheters were removed. Ten patients underwent thoracotomies and one patient each underwent thoracoscopy and placement of a covered stent in an attempt to stop the hemorrhage. Eight patients died before the diagnosis was made. Seventeen patients died.

CONCLUSIONS: In spite of U.S. Food and Drug Administration warnings, dilators are still inserted too far in patients, resulting in devastating hemorrhage. These complications are preventable if proper technique is used. When a catheter is noted to be misplaced, it must not be removed before either a covered stent or thoracoscopy is available; otherwise, uncontrolled hemorrhage into the chest may occur. If a patient becomes unstable in the
operating room or immediate postoperative period injury to a major vein must be considered and corrected quickly.

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