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C3 - Core Curriculum in Cardiology

Sudden iatrogenic suicidal right ventricle

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ABSTRACT

It is important to obtain a good withdrawal pressure tracing while performing cardiac catheterization in cases with right ventricular outflow tract (RVOT) obstruction to document the site and severity of obstruction. However efforts to manipulate the catheter in the RVOT (either to obtain the gradients or to position the catheter for an outflow angiogram) can sometimes precipitate severe dynamic RVOT obstruction with complete cessation of forward flow leading to life threatening hypotension.

The following hemodynamic traces highlight this rare phenomenon which needs to be borne in mind at all times while performing cardiac catheterization in such patients.

It is important to obtain a good withdrawal pressure tracing while performing cardiac catheterization in cases with right ventricular outflow tract (RVOT) obstruction to document the site and severity of obstruction. However on occasion, efforts to manipulate the catheter in the RVOT (either to obtain valvular/subvalvular gradient or to position the catheter for an outflow angiogram) can precipitate severe dynamic RVOT obstruction with complete cessation of forward flow leading to life threatening hypotension, which if not recognized may be fatal. The following hemodynamic traces highlight this rare phenomenon which needs to be borne in mind at all times while performing cardiac catheterization in such patients.

The baseline hemodynamic study of an 18 year old female revealed severe valvular and subvalvular PS (Fig. 1), with systemic RV pressures (RV and aorta ~140 mm Hg). While attempting to manipulate a catheter across the RVOT during performance of an RV angiogram, sudden precipitous hypotension (systemic systolic pressure 30–50 mm Hg, RV pressure 130–140 mm Hg, Fig. 2) was noted and the patient rapidly became diaphoretic with poor respiratory effort. It was immediately realized that the catheter manipulation had triggered dynamic RVOT obstruction; the catheter was instantaneously withdrawn with rapid return of systemic pressure to normal and clinical recovery (Fig. 3).

Although dynamic infundibular obstruction is not uncommon after balloon pulmonary valvotomy especially if the intravascular volume is very low, sudden "suicidal RV spasm"

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Fig. 1 – Baseline hemodynamic study showing severe valvular and subvalvular RVOT gradient with systemic RV pressures (RV and aorta ~140 mm Hg).

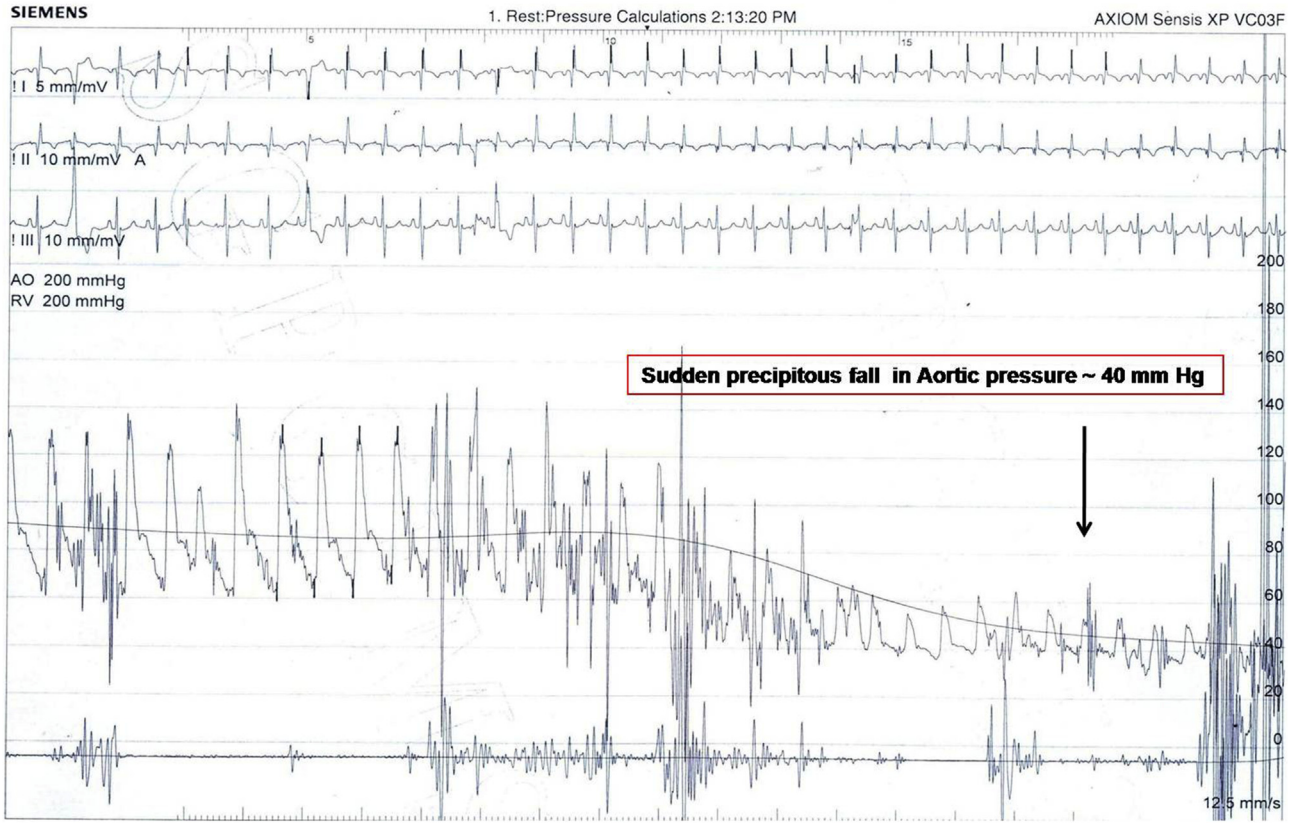

Fig. 2 – Sudden precipitous hypotension (systemic systolic pressure 30–50 mm Hg, RV pressure 130–140 mm Hg.

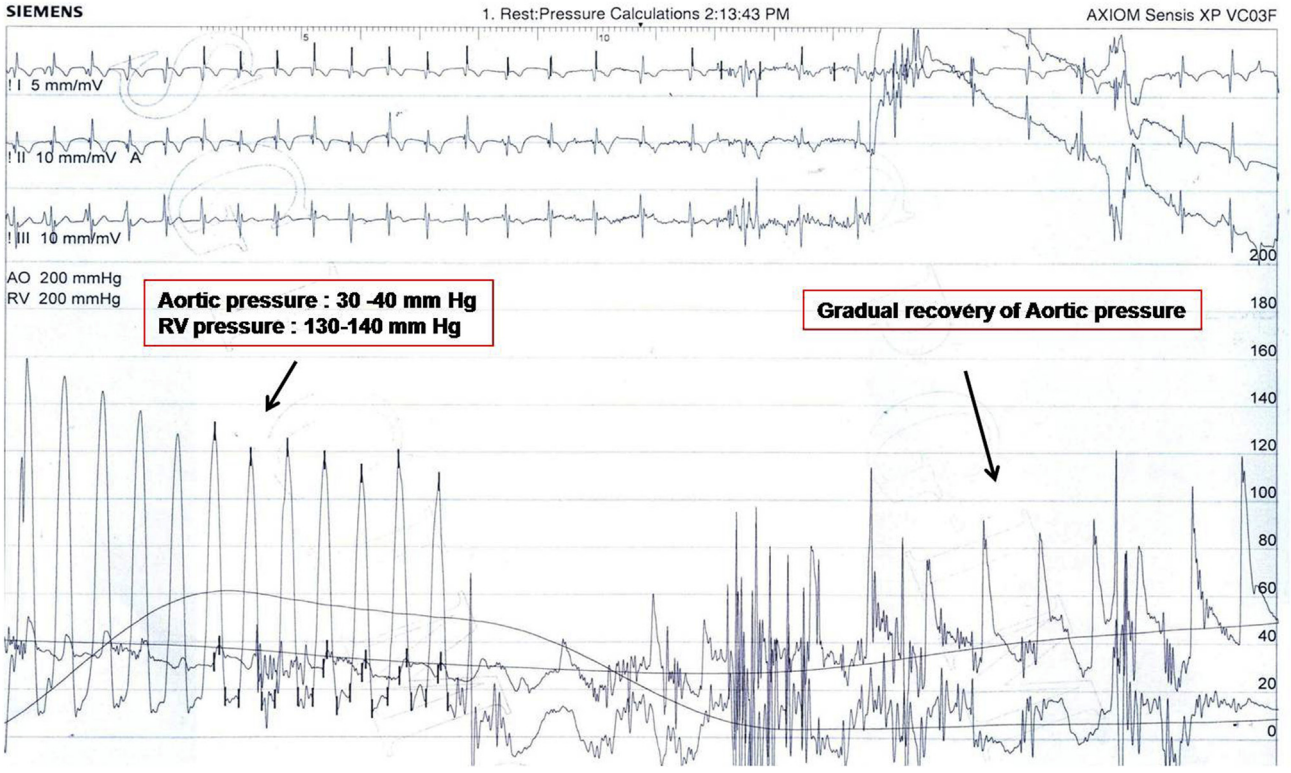

Fig. 3 – Withdrawal of the catheter in RVOT resulted in rapid return of systemic pressure to normal and clinical recovery.

can rarely occur while catheter manipulation across the RVOT as highlighted by our case. Simply being aware of such a possibility and taking timely correctives steps can help avert catastrophic complications.

Conflicts of interest

The authors have none to declare.