

## PEER-REVIEW REPORT

**Name of journal:** World Journal of Clinical Cases

**Manuscript NO:** 55338

**Title:** Balloon pulmonary angioplasty for chronic thromboembolic pulmonary hypertension: State of the art

**Reviewer's code:** 03492672

**Position:** Peer Reviewer

**Academic degree:** MD

**Professional title:** Doctor

**Reviewer's Country/Territory:** Japan

**Author's Country/Territory:** China

**Manuscript submission date:** 2020-03-22

**Reviewer chosen by:** Ruo-Yu Ma

**Reviewer accepted review:** 2020-04-05 02:18

**Reviewer performed review:** 2020-04-13 05:00

**Review time:** 8 Days and 2 Hours

|                                 |   |
|---------------------------------|---|
| <b>Scientific quality</b>       | <input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good<br><input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish            |
| <b>Language quality</b>         | <input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing<br><input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection |
| <b>Conclusion</b>               | <input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority)<br><input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection             |
| <b>Re-review</b>                | <input type="checkbox"/> Yes <input type="checkbox"/> No  |
| <b>Peer-reviewer statements</b> | Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous<br>Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   |

## **SPECIFIC COMMENTS TO AUTHORS**

**General Comments** This is a review of a wide range of studies related to BPA. While it cites a wide range of literature, the reviewer is afraid that it may be difficult for readers to read because they are not sure which information is important. For example, the paragraphs on inflammatory markers, cardiac function and myocardial injury seem unnecessary.

**Major Comments**

**COMPLICATIONS AND MANAGERMENTS** It is not common to perform BPA using PEPSI because of its complexity. The most important findings which reported from Inami T's researches are the report that RPO did not occur when the distal pressure of the target lesion was <33 mmHg (ref. 1). Based on this study, it has been recommended to limit incomplete dilation with an undersized balloon in the case of a proximal mPAP > 40 (35 mm Hg in some facilities).

1) Pressure-wire-guided percutaneous transluminal pulmonary angioplasty: a breakthrough in catheter-interventional therapy for chronic thromboembolic pulmonary hypertension. Inami T, Kataoka M, Shimura N, Ishiguro H, Yanagisawa R, Fukuda K, Yoshino H, Satoh T. JACC Cardiovasc Interv. 2014 Nov;7(11):1297-306.

**BPA PRINCIPLE** Unlike PEA, BPA only depresses fibrous tissue, not eliminates it. Reports of different amounts of fibrous tissue in bands, webs, and occlusive lesions are true, but most important thing for the readers, the efficacy of BPA is limited when the amount of fibrous tissue is high.

**INDICATIONS AND CONTRAINDICATIONS** Although the authors describe that old age is not a relative contraindication for PEA, BPA generally has more tolerant indications for old age and co-morbidities than PEA. Diabetes or hypertension does not contraindication to BPA. Furthermore, it is misleading to state that active infection is a contraindication to BPA, as BPA was performed in patient with CTEPH who suffer acute pneumonia. BPA is also not contraindicated in severe hepatic and renal dysfunction. Although COPD is not contraindicated, the most important precaution regarding BPA in

patients with pulmonary disease is that if BPA is performed in the area of ventilatory disorders, It can cause hypoxemia. LESION SELECTION AND INTERVENTIONAL PROCEDURE Although the author uses the wording of “FFR”, it is not appropriate wording because the flow reservoir is not measured. The wording of “Ratio of distal: proximal pressures across the target lesion ( $P_d / P_a$ )” is sometimes used. Because BPA does not use a stent, it is difficult to achieve adequate dilatation, and the evaluation of dilatation is not important in OCT and IVUS immediately after dilatation. Because spontaneous vessel dilatation occurs (ref. 1), it difficult to predict the vessel status of the chronic phase due to on an acute phase luminal evaluation. Acute vascular lumen opening as a therapeutic goal should not be recommended because it increases the risk of vascular rupture and RPO. 1) Negative acute hemodynamic response to balloon pulmonary angioplasty does not predicate the long-term outcome in patients with chronic thromboembolic pulmonary hypertension. Hosokawa K, Abe K, Oi K, Mukai Y, Hirooka Y, Sunagawa K. Int J Cardiol. 2015 The femoral vein approach is feasible and practiced even with the inferior vena cava filter. Regarding Current therapeutic goal of BPA procedure is to achieve normalization of hemodynamics ( $mPAP < 25$  mmHg) and oxygen saturation  $> 95\%$  without using any vasodilators or oxygen supplementation [85-87]. Symptoms on exertion may persist even when  $mPAP < 25$ . It is unclear whether riociguat is effective or not, and there is no concrete evidence on therapeutic goal. The author has to describe that the therapeutic goal of BPA is controversial. PROMISING IMAGING MODALITIES IVUS, which has a lower resolution than OCT, is difficult to assess for thin organised thrombi in the vessel. IVUS is used primarily to measure vessel diameter to determine balloon size.