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Case Report

A New Device for Managing Refractory Epistaxis in ICU Patients with COVID-19

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ABSTRACT

Epistaxis is a common and a well-known symptom. Nasal packing is an effective treatment in most cases [1]. The COVID-19 disease treatment includes conventional or high flow nasal oxygen therapy and systemic anticoagulation [2]. Patients in intensive care unit may require therapeutic anticoagulation for venous thromboembolism, hyperinflammatory status, extracorporeal membrane oxygenation (ECMO) and multiple other pathologies. The use of therapeutic anticoagulation increases risk of nose bleeding, and its management may be challenging. CAVI-T (Figures 1 & 2) is a new asymmetrical low-pressure balloon that have shown promising results to control epistaxis in emergency. We report herein the management of severe epistaxis in two COVID-19 patients admitted to ICU for severe respiratory failure.

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Patient 1

A 51-year-old COVID-19 positive male patient admitted to ICU for respiratory failure. He was intubated, sedated and ventilated in prone position. Therapeutic anticoagulation with enoxaparin was indicated due to hyperinflammatory status (fibrinogen=8.7g/l). Because of enteral feeding intolerance, a nasogastric tube (SALEM) was inserted and placed on suction for 12 hours. The patient then developed epistaxis with haemoglobin drop from 10.4 g/dL to 9.2g/dL within 24 hours. Further tests revealed no hemostasis abnormalities (platelets 231 g/l, TCA 1.43, TP 100%). Hence, therapeutic anticoagulation was deemed to be the cause of patient's epistaxis. Despite anterior packing with Algosteril® bleeding continued and haemoglobin level dropped to 8.0g/l.

Therefore, a CAVI-T balloon was placed in each nostril and inflated with 15 cc of air. Bleeding decreased within few hours and stopped thereafter. Haemoglobin stabilized and red blood cell transfusion was not necessary despite maintaining therapeutic anticoagulation. Balloons were deflated and removed 48 hours after insertion without relapse of epistaxis.

Patient 2

A 31-year-old male patient was admitted in ICU for respiratory failure due to SARS-CoV-2 infection. Patient did not improve despite high flow

oxygen delivery, and he needed to be intubated and sedated. Because of severe adult respiratory distress syndrome with a PaO₂/FiO₂ ratio of 50 despite prone positioning a venovenous ECMO was implemented. In addition, acute renal failure developed and the patient was placed on continuous hemodialysis. After initiation of anticoagulation, patient developed diffuse hemorrhagic status with epistaxis, hematuria and bleeding at puncture sites. Bilateral nasal packing with Algosteril® was ineffective. Haemoglobin dropped and patient was transfused.

CAVI-T balloons were inserted in each nasal cavity and were inflated with 10 cc air. Epistaxis resolved within 24 hours. Haemoglobin stabilized and patient did not need further blood transfusion. Balloons were deflated after 48 hours and removed without epistaxis recurrence.

The CAVI-T Treatment

The CAVI-T device (dianosic®, Strasbourg, France) is a new, asymmetric, low-pressure balloon with European agreement for epistaxis treatment. The introduction is very simple with a specific guide. After nose cleaning, the asymmetric CAVI-T balloon is inserted with the guide placing the marker at the level of the columella – marker 1 (anterior bleeding) or the marker 2 (posterior bleeding) – (Figures 1 & 2). The balloon is inflated with air (around 10 cc) and then the guide is removed. If necessary, the balloon can be inflated up to 25 cc to control epistaxis. A balanced inflating is necessary to limit the risk of expulsion

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of a hyperinflated balloon. After 48 hours, the asymmetric CAVI-T balloon can be deflated. After epistaxis is controlled, the balloon is left in place for further 24 hours. With no epistaxis recurrence, the balloon can be withdrawn. For our two patients, this balloon was easily introduced in each nasal fossa. The epistaxis was controlled and there was no recurrence after deflating the balloons.



Figure 1: The CAVI-T device.



Figure 2: The asymmetric balloon.

Discussion

COVID-19 is a highly contagious pathology and otorhinolaryngologist can be easily infected [3]. Epistaxis in ICU patients results from several associated factors including oxygen therapy, nasogastric tubes and the use of therapeutic anticoagulation. The oxygen therapy dries the nasal mucosa making it more fragile. Insertion of nasogastric tube may be traumatic. High proportion of ICU patients require therapeutic anticoagulation [2]. Traditional techniques (packing) of epistaxis control must be tried before considering using nasal balloon [1]. Numerous types of absorbable nasal packing are available in the market and the use of one type over another is a personal choice [1]. Non-absorbable nasal packing can also be used. The usage of such material seems to be more efficient for some ENT teams [1]. However, it presents the risk of recurrence of epistaxis during the unpacking [1].

Probes with double balloon are used when nasal packing is insufficient. While these devices carry the advantage of being efficient and easy to use, they could be a painful technique. These probes are stiff and the introduction can be traumatic. The last alternative is a surgical or a radiological approach with ligation or embolization of the

sphenopalatine artery. These procedures could expose the patient to major complications [1]. In this therapeutic arsenal of epistaxis, the CAVI-T balloon can find its place in managing resistant epistaxis after traditional nasal packing.

In our experience, in ICU patients with COVID-19 the advantages of this new balloon were:

- i. No external part with no risk of damage to the nostril.
- ii. The ability to place patients in prone position without damaging the nostril.
- iii. Compliant balloon that fits nasal anatomy.
- iv. Low-pressure balloon.
- v. Soft patent tube in the center of the balloon permits nasal oxygen therapy.
- vi. Allows patient's caregiver to maintain a safer distance when introducing the device.
- vii. Reduce aerosolization of nasal secretions.

This paper has several limits relating to the small number of patients, the single institution report, and the novel tool used. However, this device seems to be a very effective tool for COVID-19 patients with epistaxis and for the medical staff.

Conclusion

Epistaxis management in COVID-19 patients can be challenging. The asymmetric CAVI-T balloon can be a useful alternative due to its efficacy and the increased protection of medical staff while handling the device with the specific introducer.

Conflicts of Interest

None.

Funding

None.

Ethical Approval

Country-specific approval of all human procedures: CE marking N°DD601460330001.

REFERENCES

1. Tunkel DE, Anne S, Payne SC, Ishman SL, Rosenfeld RM et al. (2020) Clinical Practice Guideline: Nosebleed (Epistaxis). *Otolaryngol Head Neck Surg* 162: S1-S38. [[Crossref](#)]
2. Nicola M, O'Neill N, Sohrabi C, Khan M, Agha M et al. (2020) Evidence based management guideline for the COVID-19 pandemic - Review article. *Int J Surg* 77: 206-216. [[Crossref](#)]
3. Workman AD, Jafari A, Welling DB, Varvares MA, Gray ST (2020) Airborne Aerosol Generation During Endonasal Procedures in the Era of COVID-19: Risks and Recommendations. *Otolaryngol Head Neck Surg* 163: 465-470. [[Crossref](#)]