



# Efficacy of Continuous Veno-Venous Hemofiltration on Treatment of Hand Foot and Mouth Disease with Severe Complication and Factors Related to Outcome in 2011 – 2016

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## OBJECTIVE

To evaluate the efficacy of continuous veno-venous hemofiltration (CVVH) on treatment of hand foot and mouth disease (HFMD) with severe complication and factors related to outcome.

## METHODS

**Study design:** Retrospective descriptive study of cases series.

**Patients:** children with age of 1 month – 15 years old suffering HFMD complicated with severe complication including cardiopulmonary collapse, automatic nervous system dysregulation, admitted at PICU, Children's hospital, Ho Chi Minh City, Vietnam from 2011 till 2016.

## RESULTS

From 2011 till 2016, 117 patients of HFMD with severe complication, confirmed by throat or rectum swab samples PCR positive for EV/EV71 have been investigated level of proinflammatory cytokines and given CVVH, average age of 22.1 months old. All of them have suffered from respiratory failure that happened at day 1-6 of illness, 82.9% of them have fallen into shock that happened at day 1-5 of illness, hypertension accounting for 10.3%, tachycardia > 180 bpm 86.3%, coma (with GCS < 10) 40.2%, tremor 14.4% profuse sweating 58.9%, mottled skin 81.2%.

Investigation of blood level of proinflammatory cytokines in 23 patients of HFMD with severe complication showed that level of TNF alpha, IL1 beta, IL6, IL8, IL10, IFN gamma elevated up to  $15.3 \pm 11.3$  (normal range of TNF alpha < 11 pg/ml),  $13.9 \pm 6.5$  (IL1 beta < 14.5 pg/ml),  $87.2 \pm 3.5$  (IL6 < 1.23 pg/ml),  $87.5 \pm 17.3$  (IL8 < 32 pg/ml),  $36.8 \pm 19.8$  (IL10 < 12.8 pg/ml),  $16.6 \pm 5.9$  (IFN gamma < 13.6 pg/ml) declined at 12 hours  $7.4 \pm 3.6$ ,  $8.6 \pm 6.1$ ,  $31.3 \pm 27.9$ ,  $66.7 \pm 4.2$ ,  $22.1 \pm 10.4$ ,  $6.1 \pm 4.4$ , 24 hours  $4.9 \pm 2.8$ ,  $1.7 \pm 1.4$ ,  $38.5 \pm 29.2$ ,  $24.1 \pm 8.9$ ,  $3.7 \pm 0.5$ ,  $6.3 \pm 3.2$  respectively.

The effectiveness of CVVH was evidenced by the clinical improvement, reduction of inflammatory cytokines level in the blood. Average duration on CVVH was  $29.4 \pm 7.2$  hrs.

CVVH associated complications were noted filter clotted 19.6%, thrombosis induced catheter clogging 25.6%, air in CVVH circuit 9.4%, hypotension 40.2%, hypothermia 24.8%, hypokalemia 41.9%.

Outcome of treatment showed survival rate 65%, ventilator dependent 10.3%, mortality 24.7% under refractory persistent shock.

Risk factors related to mortality included profound shock, elevated level of lactate > 5mmol/L, increased white blood count > 16000/mm<sup>3</sup>, increased platelet count > 400000/mm<sup>3</sup>, elevated level of blood sugar > 180mg%.

## CONCLUSION

CVVH is the final supportive intervention for patients of HFMD with severe complication who failed to standard therapy.

**Key words:** HFMD Hand Foot and Mouth Disease, CVVH continuous veno-venous hemofiltration.

