JVS report: Swine flu and respiratory distress linked to blood clots

Empiric Anticoagulation Decreases Venous Thromboembolism (VTE) In Critically Ill Influenza A H1N1 Acute Respiratory Distress Syndrome (ARDS) Patients Have

- 23x higher risk of pulmonary embolism
- 18x higher risk of VTE
- 33x more likely to have VTE than patients on empiric systemic anticoagulation (p=.01), without increasing bleeding complications

SVS: Frequent blood clots documented in swine flu patients with ARDS

CHICAGO, Illinois, May 2019 – A new study has found that ICU patients with swine flu and acute respiratory distress syndrome were 33 percent more likely to develop a blood clot if they were not given a blood thinner when admitted.

Since the virus showed up in humans 10 years ago, researchers have noticed the high incidence of mortality, morbidity and health care costs in patients with swine flu, also known as H1N1.

“To our knowledge, this is the first study to document venous thromboembolic events (VTE) incidence in adult ICU patients with severe acute respiratory distress syndrome (ARDS) due to H1N1 viral pneumonia,” noted Dr. Andrea Obi, first author of the report, published in May’s *Journal of Vascular Surgery: Venous and Lymphatic Disorders*.

“This high rate of VTE was encountered despite empirical anticoagulation in more than half of our cohort,” she added.

The cohort study from the University of Michigan confirms that the high incidence of venous thromboembolic events (VTE) in patients with H1N1 ARDS (acute respiratory distress syndrome) can be mitigated with empiric anticoagulation upon admission.

The severity of swine flu is manifested by non-pulmonary complications, mainly VTE. In response to a clinical report from the University of Michigan in 2009, The Centers for Disease Control and Prevention issued a warning regarding the “development of a hypercoaguable state and fatal thromboembolic events” for patients with this disease.

The actual incidence of VTE in H1N1 infection is unknown, nor is the therapeutic effect of anticoagulation in this ill patient population.

University of Michigan researchers led by Dr. Lena Napolitano, in a follow up to their 2009 report, performed a single-center retrospective cohort study of 71 patients admitted to the surgical intensive care unit with severe ARDS with possible H1N1 viral pneumonia between 2009-2010.

In this cohort, the empiric use of anticoagulation involved:

- Systemic heparin anticoagulation (n=39, 55%) versus
- VTE prophylaxis (n=32, 45%).

The overall incidence of thromboembolic events was 37%, much higher than 6% observed in their ICU patients overall. Following evaluation for H1N1 infection, they observed:

- H1N1 positive patients (n=36)
  - Deep venous thrombosis, 28%
  - Pulmonary embolism, 28%
  - VTE, 44%
- H1N1 negative (n=35)
  - DVT, 23%
  - PE, 9%
  - VTE, 29%

Independent risk factors for VTE included:

- H1N1 infection (Odds Ratio, 17.9)
- Bacterial pneumonia (OR, 6.0)
- Vasopressor requirement (OR, 13.1)

Importantly, those with H1N1 who did not receive therapeutic anticoagulation were 33 times more likely to have any
VTE event.

“Whereas a relationship between H1N1 influenza and propensity toward thrombotic events has been suggested by clinical reports and animal studies, a relationship between seasonal influenza and thromboembolic complications has previously not been proved. Our data are the first to confirm such a relationship,” she added.

Their study did not observe a reduction in overall mortality with empirical system heparin anticoagulation. However, Dr. Obi suggested, “other benefits to VTE prevention exist, such as elimination of potential post-thrombotic syndrome and pulmonary hypertension.” She notes that “the small sample size and otherwise non-standardized management of the patients may have contributed to lack of mortality benefit.”

Ultimately this follow-up study by a group with significant experience in this area suggests consideration of systemic anticoagulation in critically ill patients with influenza A H1N1 viral pneumonia and severe ARDS.

The full scholarly article is open source until June 30 at JVSVL-H1N1 .

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Graphic: Empiric Anticoagulation Decreases Venous Thromboembolism in Critically Ill Influenza A H1N1 ARDS.

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