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While clinicians focus on the primary respiratory symptoms of COVID-19 in the background, there are many other insidious consequences. For example, COVID infection causes the initiation of severe, uncontrollable inflammation. We talked about this last week: it's the systemic inflammatory response (SIRS. Three things happen with systemic inflammation: vasodilation, capillary permeability, and clotting. That third component is what we're going to talk about today. One consequence of severe inflammation is disseminated intravascular coagulopathy (DIC). DIC causes both bleeding and clotting at the same time and can cause your patient to be a risk for developing venous thromboembolism (VTE) due to the clotting component.

Welcome to the Nurse Tutor PodCast! Here you will find tips and timesavers that are useful, practical, and understandable to help improve your nursing care.

How does a respiratory infection cause venous thromboembolism? Well, first, brief pathophysiology of sepsis and multiorgan dysfunction. Sepsis is an out of control inflammatory reaction. In this case, it's caused by the COVID infection. COVID causes inflammation that is occurring throughout the body. Inflammation occurs when we have some kind of invader in the body. For example, let's say you get a cut on your finger, and you get some bacteria in that cut. You would expect an inflammatory response to try to wall off that bacteria to fight it off so that you don't get septic from a little cut on your finger. You don't want that bacteria going anywhere. You want our body to be able to fight it off right there on the spot. That's okay when it is local, and it's well-controlled when it's local. However, when we have an infection that is going throughout the body, as we have with COVID, then we're going to end up having an out of control inflammatory response.

Remember again, the three consequences of inflammation are vasodilation, capillary permeability, and clotting. The third component, clotting, is the piece we're going to talk about today. COVID causes a hypermetabolic state that is similar to that of a burn injury. In the Cronin, et al. (2019) article, you'll see they found a higher dose of unfractionated heparin and low molecular weight heparin, which were required in burn patients to prevent them from developing venous thromboembolism. There's also another article by Dutt at al. (2020) who found that by using enoxaparin 40 milligrams twice a day, or

enoxaparin 0.5 milligrams per kilogram twice daily or unfractionated heparin 7500 units three times a day had an enhanced effect in their patients with severe COVID infections.

In the situation of an out of control inflammatory response, patients need higher doses of these preventative measures to try to prevent the development of venous thromboembolism. To ensure that your patient has adequate levels of anticoagulant, follow the anti-Xa level. A component of the coagulation cascade, Xa, is a primary contributor to coagulation. And if you find that the anti-Xa level is insufficient, then you need to increase the dose of the medication. In short, there is a protocol for being able to monitor whether or not your therapy is effective.

The other piece that you need to keep in mind, though, is that there are lots of nursing interventions that you can employ that also help to prevent the patient from developing venous thromboembolism. Turning, positioning, and ambulation. Of course, ambulation would be an excellent intervention, but a lot of our patients with COVID are so sick, and they're having such severe respiratory distress, they can't get out of bed. So that may not be an option for all patients.

But we can use our SCDs -- sequential compression devices, those are the calf squeezers you put on to help to decrease the chance of venous thromboemboli. Assessment for venous thromboembolism, although that may not be front and center of your mind when your patient is exhibiting respiratory distress or when your patient may be having shock-type symptoms, to be assessing for venous thromboembolism, and that's why I'm bringing it up here is that you need to have a higher incidence of awareness of the possibility that the patient could develop venous thromboembolism and assess for it.

Takeaways:
COVID infection can cause coagulopathy and increases venous thromboembolism risk. Therefore, you want to make sure that you are providing venous thromboembolism prophylaxis and that you are assessing for venous thromboembolism in your patients. COVID-19 causes many complications that can have devastating effects. Encourage proper prevention strategies. Watch for additional complications.

To find out more about sepsis, see our YouTube video managing distributive shock. The Nurse Tutor podcast is available on iTunes, Spotify, and wherever you get your podcasts. Subscribe, so you never miss an episode. Get nursing news, tips, and timesavers sent right to your inbox by subscribing to the Nursing Prof newsletter, go to thenursingprof.com.

Thanks for joining me this week. Until next time, Bye now.

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