Rouleau

The following is excerpted from the article "Canceling the Spike Protein – Striking Visual Evidence" by Thomas Levy MD, Townsend Letter, April 2022. The full article with citations is posted for you in the Articles and Papers Archive.

Both the COVID vaccine and the COVID infection have been documented to provoke increased blood clotting [thrombosis]. Viral infections in general have been found to cause coagulopathies resulting in abnormal blood clotting. An elevated D-dimer test result is almost an absolute confirmation of abnormal blood clotting taking place somewhere in the body.

Such clots can be microscopic, at the capillary level, or much larger, even involving the thrombosis of large blood vessels. Higher D-dimer levels that persist in COVID patients appear to directly correlate with significantly increased morbidity and mortality.

Platelets, the elements of the blood that can get sticky and both initiate and help grow the size of blood clots, will generally demonstrate declining levels in the blood at the same time D-dimer levels are increasing, since their stores are being actively depleted.

A post-vaccination syndrome known as vaccine-induced prothrombotic immune thrombocytopenia (VIPIT) with these very findings has been described. Vaccinations have also been documented to cause bleeding syndromes due to autoimmune reactions resulting in low platelet levels.

This can create some confusion clinically, as chronically low platelet levels by themselves can promote clinical syndromes of increased bleeding rather than increased blood clotting. As such, some primary low platelet disorders require pro-coagulation measures to stop bleeding, while other conditions featuring primary increased thrombosis with the secondary rapid consumption of platelet stores end up needing anticoagulation measures to stop that continued consumption of platelets.

Significant thrombosis post-vaccination in the absence of an elevated D-dimer level or low platelet count has also been described. In platelets taken from COVID patients, platelet stickiness predisposing to thrombosis has been shown to result from spike protein binding to ACE2 receptors on the platelets.

Persistent evidence of blood clotting (increased D-dimer levels) in chronic COVID patients might be a reliable way to determine the persistent presence/production of the COVID spike protein. Another way, might be dark field microscopy to look for rouleaux formation of the red blood cells (RBCs).

At the time of the writing of this article, the correlation between an increased D-dimer level and rouleaux formation of the RBCs remains to be determined. Certainly, the presence of both should trigger the greatest of concern for the development of significant chronic COVID and post-COVID vaccination complications.

Under conditions of inflammation and systemically increased oxidative stress, RBCs can aggregate to varying degrees, sometimes sticking together like stacks of coins with branching of the stacks seen when the stickiness is maximal. This is known as rouleaux formation of the RBCs. When this rouleaux formation is pronounced, increased blood viscosity (thickness) is seen, and there is increased resistance to the normal, unimpeded flow of blood, especially in the microcirculation.

It is clear that any aggregation of the RBCs, as is seen with rouleaux formation, will increase resistance to normal blood flow, and it will be more pronounced as the caliber of the blood vessel decreases. Not surprisingly, rouleaux formation of the RBCs is also associated with an impaired ability of the blood to optimally transport oxygen, which notably is another feature of COVID spike protein impact.

Rouleaux formation is a reliable indicator of abnormal RBC stickiness and increased blood viscosity, typically elevating the erythrocyte sedimentation test (ESR), an acute phase reactant test that consistently elevates along with C-reactive protein in a setting of generalized increased oxidative stress throughout the body.

As such, it can never be dismissed as an incidental and insignificant finding, especially in the setting of a symptom-free individual post-vaccination appearing to be normal and presumably free of body-wide increased inflammation and oxidative stress.

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