

## ALL PRIMARY THROMBOSES ARE IDEOPATHIC VIRCHOW-TRIAD AND THROMBOSIS

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50 percent of thromboses are said to be idiopathic.

This expression derives from the two ancient greek words: eidos = ones own or by itself and pathos = suffering.

A disease coming by itself. As it is coming the definition implies, that it was not there in the beginning. In other words it is not congenital.

Coming out or the blue, from nowhere, without a known cause.

If we think that we know the cause of the other 50% we are mistaken.

The undoubted basis of our understanding is the Virchow - Triad: Three phenomena in which thromboses can occur: hypercoagulability of blood, injury to the endothelium and interrupted blood flow.

### **Blood**

As contemporary treatment is mainly medical with the aim of reducing the coagulability the impression can develop, that blood would be the problem.

Is the blood too much coagulable in our patients?

I say no. It is impossible, as primary thromboses occur only in special locations whereas the blood is everywhere the same at the same time all over the same body. How could blood know to coagulate only in the leg? Why no thrombus anywhere else then?

In cases of „real“ thrombophilia of blood like the Heparin-induced thrombophilia we observe thromboses all over the body, in arteries and veins alike. Only then I agree: blood is obviously hypercoaguable.

But - Blood is not like this in our patients.

This is why I claim: Blood is perfectly fine in coagulability, wether for example with Factor V Leiden mutation or without it, Blood does not coagulate too fast, not too strong or what so ever. The cause of thrombosis can not be found by examining blood.

All other risk-factors, which are resulting in changes of blood-conditions like hormone variations during pregnancy, hormone-therapy of any kind, smoking or the ones generally affecting the body like age or obesity can also never explain the local event of a thrombosis.

Yes: Virchow is right  
thromboses can occur in case of  
hypercoagulability of blood.

Cause: the cause is in our example the medication with heparin

No: in primary thrombosis this is not the case.  
No: no explanation for localization

In our search for the cause we must focus on the affected area.

## Injury

Iatrogenic trauma of the endothelium is either mechanical in intravenous procedures, chemical after instillation of irritating drugs or lately deliberately thermal.

Isolated trauma of the vein in daily life though is almost impossible as veins are protected in two ways: first they are imbedded in structures like muscles, next to bones and skin. Then they have the quality of being among the most flexible and soft tissues in the leg.

For local trauma from outside nature has an appropriate answer: hyperperfusion and healing - reparation of the vessel but not thrombosis.

Yes : Virchow was right:  
thromboses can occur in case of injury of the vein.  
Cause: medical procedures  
No: in primary thromboses this is not the case  
Yes: explanation for localization

Two situations of Virchows Triad can be counted out in being the cause of primary thrombosis.

Last on the list - last chance for science- is

## Interrupted blood flow.

The observation of frequent thromboses after prolonged bed-rest and after what guidelines call major operations made us believe that immobilization would stop blood flow and result in thrombosis. When we think about, it is as silly as when on a boat ride my little brother used to be afraid that the boat would sink whenever I stopped rowing it. Circulation does not need movement. A look at immobilized arms after fractures shows, that there immobilization never results in a thrombotic event. Immobilization as a such is not the cause of stasis.

This is only possible in pathologic anatomy in form of **stenosis or aneurysm**.

## Stenosis

Arm vein thromboses are seldom, but known to be the result of a stenotic process between the first rib and the clavícula or neighboring tissues.

In the pelvis a stenosis of the left hypogastric vein was reported by May and Thurner<sup>1</sup> in 1957 as a finding in pelvic DVT.

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<sup>1</sup> May R, Thurner J (1957). "The cause of the predominantly sinistral occurrence of thrombosis of the pelvic veins". *Angiology* 8 (5): 419–27

Lately entrapment phenomena - functional stenoses - in the popliteal vein in natural situations like full knee extension were described by Francois Uhl<sup>2</sup> in Paris and Jirci Spacil in Prag<sup>3</sup>

### **Aneurysm**

Aneurysmatic veins are for example the varicose veins. They are frequent and the ones where thromboses form in the superficial locations. Widening of deep veins in form of true aneurysms are rarely seen. Everyday though I observe during duplex examinations enlarged gastrocnemius and other calf - veins; veins, which we know, are most frequently the starting point of DVT.

Such patho-anatomical phenomena are hardly ever mentioned or looked for. But only these can be the reasonable background of thromboses as only their existence explains the localization of the disease. In all primary thromboses stenosis or aneurysm must be present as no other influence can lead to this phenomenon.

Yes: Virchow was right  
thromboses occur in cases of interruption of blood flow  
Yes: in primary thromboses this is the case  
Yes: explains localization

This could be the end of my paper -  
but even if we look for these anatomical aberrations and might be able to detect them all with the technical progress to come in maybe 100 years from now, we would still not know the cause of thrombosis.

### **Mutation of anatomy - Process - Degeneration**

As I mentioned, none of these thromboses is congenital. Also these anatomical situations are not there from the start.

A mutation of the primary anatomy, of the primary plan: „human being“ is in progress here. A degenerating external factor, changes formerly healthy veins to stenotic and widened ones in which the thrombosis can happen.

As long as we do not know this factor, we should freely admit, that we do not know the cause of thrombosis,... that all primary thromboses are idiopathic.

Cause: not known.

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<sup>2</sup> Jean-François Uhl, André Cornu-Thénard, Patrick H. Carpentier, .... unusual case of popliteal entrapment syndrome”  
J Vasc Surg 2004;39;1340-3

<sup>3</sup>Spacil Evidence of venous stasis by full knee extension  
University Hospital, Praha 2, Czech Republik  
Presentation during annual meeting of the German phlebological society 2010 Aachen

