Charlotte Cordonnier

COHDICH

COnsequences of Haemostatic Defects after IntraCerebral Haemorrhage

Project Coordinator:
Charlotte Cordonnier, Dept. of Neurology and Stroke Centre, CHU Lille, France

Project Partners:
Lenting Peter, INSERM Unité U1176, France

Kufner Anna, Charité–Universitätsmedizin Berlin, Center for Stroke Research Berlin, Germany

Tsai Hsin-His, Dept. of Neurology, National Taiwan University College of Medicine, Taiwan

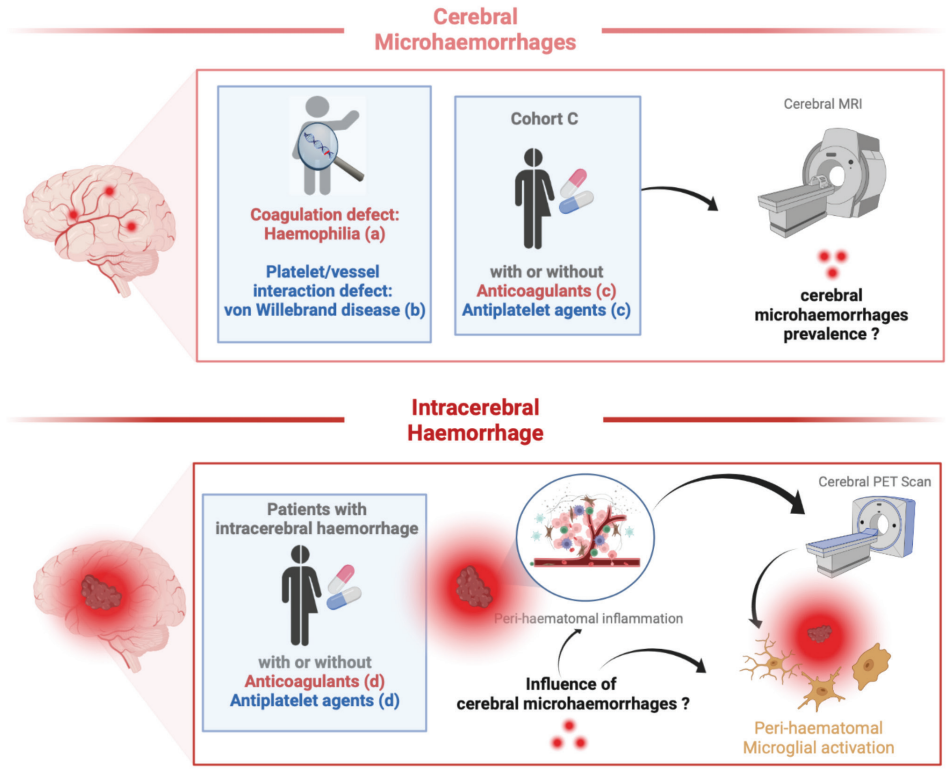
Cerebral microhaemorrhages (CMHs) are tiny bleedings seen on brain MRI. People with these tiny bleedings can develop intracerebral haemorrhages that are the most devastating type of stroke. Most studies have considered that CMHs are due to an ongoing disease in the brain small vessels. However, besides the fragility of the vessels, some disorders in the blood coagulation may influence the transformation of CMHs into big bleeds. Genetic disease such as haemophilia and von Willebrand disease (VWD) are unique situations: patients have no known fragility of their brain small vessels but their blood does not coagulate properly and in them, major big bleeds are frequent and devastating.

Hypothesis: In the setting of CMHs, the existence of a blood disorder modifies the ability of the brain to fight against brain bleeds.

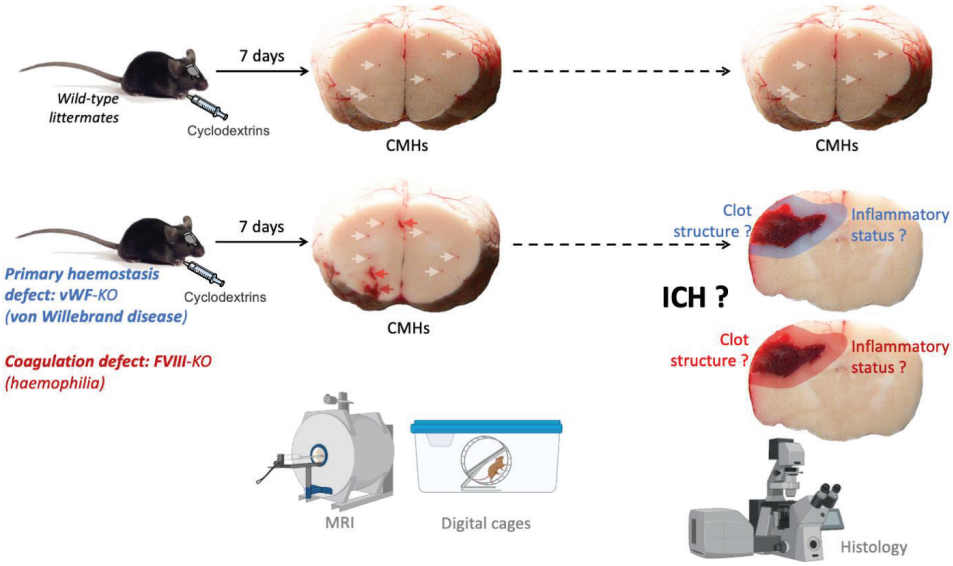
Methods: translational approach to study brain bleeds in animal models and in patients with blood disorders.

In part1, we will determine how often patients with haemophilia and VWD exhibit CMHs on the MRI. We will also look at inflammation in the brain when a large bleed occurs. In part2, we will induce CMHs in mouse models of haemophilia and VWD. We will try to understand what happens when CMHs become larger in terms of blood coagulation and inflammation.

Relevance to public health: Being able to identify who is at risk of large brain bleeds could be helpful, especially in people with genetic disease such as haemophilia. Indeed, in situations at risk, doctors could modify their protective treatment. From a rather caricature scenario of rare genetic diseases, this new knowledge may also benefit to patients with other blood coagulation disorders (for example when people take oral anticoagulants).



Graphical abstract part 1



Graphical abstract part 2