

Hematologic Disturbances and Neurosurgery: Why Don't We Consider Them?

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There are some conditions in neurosurgical practice that could be as common as insidious, especially if presented by people without risk factors. This could be the case of Chronic Subdural Hematoma (CSDH), considered a disease of the elderly, with a low morbidity among young people. The well recognized hypothesis about the genesis of CSDH (head injury, coagulopathies, hemostatic disorders, anti-aggregant therapy etc.) could not always explain its developing mechanism among young people. Because of the unspecific symptoms and insidious onset in juveniles and young adults, CSDH could be neglected even undertreated in that population group but many reports suggest some other predisposing factors may exist.

Other interesting articles [1,2] about CSDHs in young people describes different situations, joined by the same "pathological theme": refractory headache and no hematological disorders, all treated with surgery.

We had previously described a case of a young man affected by refractory headache, with a CT scan showing bilateral chronic subdural hematomas, without no other risk factors for developing CSDH. His history included only arterial hypertension, treated with hydrochlorotiazide, ibesartan, amlodipine, nebivolol.

The preoperative haematological screening was normal. In the operating room, the brushing of skin, to determine the site of surgical incisions, caused an unusually profuse bleeding. Because of the excessive bleeding, two unit of fresh frozen plasma were given intra-operatively. The day after surgery, a hematologic consultation was required and initial tests for bleeding disorders were done in order to rule out more common cause of bleeding.

The initial tests for VWD (vWF:Ag, vWF:RCo, factor VIII) confirmed the diagnosis of Von Willebrand disease type I and, in agree with the haematologist, a therapy with desmopressin was started.

The infusion of desmopressin together with the prompt surgical operation was decisive to the good patient recovery [3]. After that, we found other two cases of this association between CSDH and von Willebrand disease in young people, with the same characteristics: no head trauma but only refractory headache [4].

A 35 years old man harboring a bilateral non traumatic chronic subdural hematoma was admitted to our department because of a continuous headache, resistant to non-steroidal anti-inflammatory drugs. There was not a family history of bleeding disorders or haematological disease, neither head injury.

His blood type was O positive. Such circumstances recalled us the previous case we had described, so we started the evaluation of vWF:Ag, vWF:RCo, factor VIII and the haematological results demonstrated mild alterations referable to vWD type I.

As regard the female 49 years old patient, instead, the chronic subdural hematoma was found because of a haematological check-up: the patient, in fact, was in the know to be affected by thrombocytopenia and she assumed acetyl salicylic acid. She reported an unusual, continuous, resistant headache and she was invited to perform a CT showing no pathological density areas in her brain but, because of the presence of a pellucid cyst, she had to perform two months later a MR that showed a right hemispheric chronic subdural hematoma, 15 mm thick (Figure 1).

Her blood group was O positive, too. Considering our reported case on the association between these clinical entities, even if her pharmacological therapy and the haematological disease are considered predisposing factors for development of CSDHs, the haematologist required the initial tests for vWD, which confirmed the diagnosis.

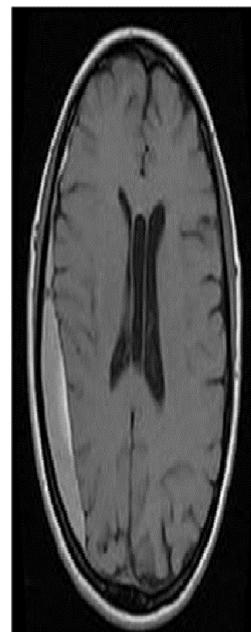


Figure 1: MR showing a non traumatic chronic subdural hematoma in a 49 years old woman affected by thrombocytopenia.

Apart of von Willebrand, another interesting case of association between hematology and CSDHs regards a female affected by AL amyloidosis, presenting continuous headache and, even in this case, blood work and specifically platelets counts normal, as well as Prothrombin Time (PT) and activated Partial Thromboplastin Time (aPTT) [5] (Table 1).

	Pre-op CSDHs evacuation	Post-op CSDHs evacuation	Post-op Acute subdural hematoma evacuation	Normal values	Unit of Measures
Platelet	253	253	253	150 - 400	Giga/L
aPTT	34.4	32.3	-		sec
PT	12.7	13.1	-		sec
INR	0.9	0.94	-	0.80-1.20	
Prothrombin Activity Percentage	121	112	-	>70	%
Mean platelet volume	9.3	8.6	8.6		µm ³

Table 1: Coagulation values.

All the cases we have described share some clinical characteristics, beside of symptoms they presented, that led us to think about a possible correlation among hematologic problems and such neurosurgical condition: absence of coagulation abnormalities and blood type O positive, so that it could be a higher risk to underestimate and undertreat this population of patients. We have already suggested that young patients with intracranial hematomas without a significant history of hematologic disease and thromboembolic predisposition and with O blood type should be, at least, considered to have “low vWF” (that slightly increases their risk of mild bleeding) and could be preventively treated with desmopressin under close observation and collaboration between the neurosurgeon and haematologist: for these patients, empiric therapy with desmopressin to raise the vWF level can be used in treating bleeding or preventing it by prophylactic treatment in particular circumstances. Another suggestion is that a work up for vWD should be made before performing extensive and often unnecessary invasive radiological imaging (i.e., angiogram), because the identification and demonstration of a real link between these two clinical entities (CSDH and vWD) among young people affected by refractory headache, with O positive blood group, could be essential to better manage the prompt surgical treatment, if necessary together with the empiric therapy with Desmopressin [3,4,6].

As regards the patient affected by AL amyloidosis, we had hypothesized a possible direct vascular injury due to the infiltration of light chains in the cerebral vessel walls determining a vascular fragility due to amyloids deposits [7] that could also explain the occurrence of complications such as rebleeding. Further evidence, autopsy studies, and a close relationship between neurosurgeon and haematologist are necessary and essential to clearly demonstrate this association, in order to better manage such a common neurosurgical disease, to minimize

bleeding problems during surgery and to better diagnose and treat a frequent neurosurgical condition, by improving the outcome of intracranial haemorrhages in this tipology of patients.

Conflict of Interest

I, Marianna Luongo, certify that there is no actual or potential conflict of interest in relation to this article.

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