Blood-fluid level

"Blood/fluid level" represents the interface between the plasma and sedimented blood and is defined radiologically as the presence of area of low computed tomography (CT) attenuation above and high CT attenuation below a discrete line of separation

Four types of intracranial cysts demonstrating blood-fluid levels have been categorized according to the nature of the pathology, i.e. primary neoplasms of the brain, metastatic deposits to the brain in cases of extraneural malignancies, lesions of vascular etiology, and intraparenchymal bleeds secondary to trauma. The group of four primary intracranial neoplasms lists an oligodendroglioma, a recurrent tumor in a case of Von Hippel-Lindau syndrome, a Grade 3 astrocytoma, and an acoustic schwannoma. Four cases of metastatic deposits to the brain were each secondary to primary malignant neoplasms of the breast, liver, ovary, and lung. Of seven cases of vascular etiology, three resulted from arterial infarction, two from hypertension, and one each from venous infarction and following anticoagulant therapy. Intracranial cysts within tumors have been postulated to occur secondary to a breakdown of the blood-brain barrier (BBB) rather than as a result of tumoural degeneration, as was thought probable earlier. ¹.

Fluid-blood levels in acute intracerebral hemorrhage are moderately sensitive to the presence of coagulopathy (ie, abnormal prothrombin time and partial thromboplastin time) and highly specific for this condition. Thus, an intracerebral hemorrhage with a fluid-blood level should prompt a thorough search for coagulopathy because early treatment of this condition may improve the 40% mortality in these patients. Caution should be used to distinguish the horizontal interface of a fluid-blood level from a clot with a flat top. A decubitus CT is useful in these rare instances ²

The diagnostic specificity and prognostic value of this finding remain unclear. In 855 patients with CTconfirmed acute ICH scanned within 48 h of symptom onset, Almarzouki et al. investigated the sensitivity and specificity of the presence of a CT-defined blood-fluid level (rated blinded to anticoagulant status) for identifying concomitant anticoagulant use. They also investigated the association of the presence of a blood-fluid level with six-month case fatality. Eighteen patients (2.1%) had a blood-fluid level identified on CT; of those with a blood-fluid level, 15 (83.3%) were taking anticoagulants. The specificity of the blood-fluid level for OAC-ICH was 99.4%; the sensitivity was 4.2%. They could not detect an association between the presence of a blood-fluid level and an increased risk of death at six months (OR = 1.21, 95% CI 0.28-3.88, p = 0.769). The presence of a blood-fluid level should alert clinicians to the possibility of OAC-ICH, but the absence of a blood-fluid level is not useful in excluding OAC-ICH ³.

Mittal et al. presented a case of warfarin-related intraparenchymal hemorrhage presenting with a classic sign of "blood/fluid level" on CT head with small clot volume ⁴⁾.

References

1)

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