

# Bilateral Frontal Hemorrhage Caused by Contrecoup Injury

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In a head injury, a coup injury occurs under the site of impact with an object, and a contrecoup injury occurs on the side opposite the area that was hit [1]. Cepeda and colleagues [2] defined the contrecoup variable as the traumatic intracerebral hemorrhage located at more than 90 degrees from the impact side. They measured the angle in a clockwise manner from the nasion. Contrecoup injuries occur when the moving head strikes a stationary object [3,4].

A 65 year old male, who suffered from arterial hypertension and used anti-aggregant drugs, was found with impaired consciousness in the bathroom by his wife. His wife remembered that a day earlier, during work, he slipped on a stone and hit his occiput against the floor. He experienced no loss of consciousness or other complaints and continued working as usual.

On arrival at the emergency department of the hospital, no evidence of head trauma was found. Computerized tomography (CT) obtained shortly after the intake examination demonstrated a linear fracture in the occipital bone [Figure 1] and bilateral extra-axial and intracerebral hemorrhage in the frontal region [Figure 2].

A follow-up CT scan conducted 2 days later showed that the contrecoup intra-axial hemorrhage had enlarged and brain edema had worsened. Immediate evacuation of the hematoma with decompressive craniectomy was performed [4].

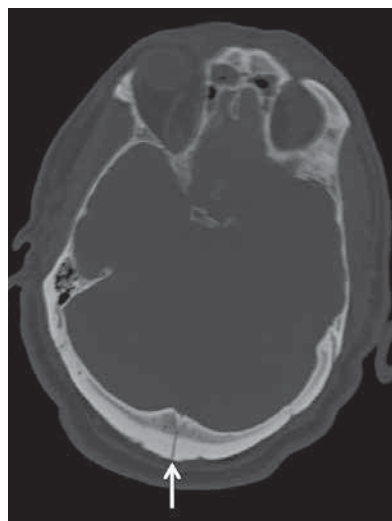
At his intake to the rehabilitation department, cognitive assessment was evaluated. Problems were found with concentration, short-term memory, orientation, and decision making, together with balance and coordination disorders. The patient was agitated and needed close surveillance.

At discharge 3 months later, he was independent in bed, transferring and walking without assistive devices, but needed the help of caregivers in activities of daily living due to remaining cognitive problems.

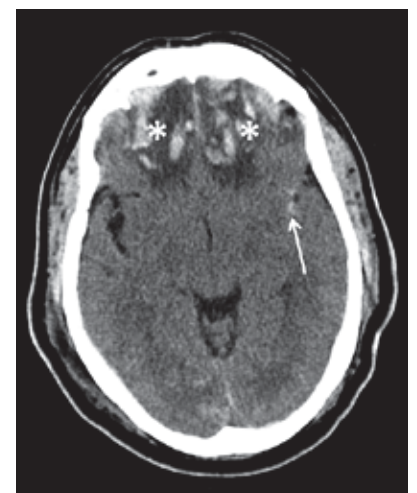
Simultaneous bilateral frontal hemorrhage is a rare finding, especially in cases of non-major trauma. One hypothesis explaining this observation is that upon skull impact, the denser cerebrospinal

fluid moves toward the site of the skull impact, displacing the brain in the opposite direction such that the initial impact of the brain parenchyma is at the contrecoup location. The brain is packed in the skull with blood vessels that are sensitive to trauma. This head impact or extreme head movement causes disruption of the blood vessels and there can be bleeding [3,4,5]. Concomitant use of anti-aggregant treatment can contribute to the hemorrhage formation [4].

**Figure 1.** Image from axial unenhanced computerized tomography of the brain, windowing for bone detail. There is a linear non-displaced fracture through the occipital bone (arrow)



**Figure 2.** Image from axial unenhanced computerized tomography of the brain, windowing for soft tissue detail. There is a heterogeneous finding in both frontal lobes (\*). The hyperdense structures represents intraparenchymal blood, whereas the hypodense regions represent brain edema. In addition, hyperdense material can be seen within the left Sylvian fissure (arrow), compared to the cerebrospinal fluid in the contralateral fissure. This finding represents an extra-axial hemorrhage in the subarachnoid space



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**Capsule****A drug to fight two lupus symptoms**

The receptor TLR9 is implicated in autoimmune diseases characterized by erroneous recognition of self DNA, such as lupus. **Perego** and co-authors found that guanabenz, an FDA-approved antihypertensive drug with anti-inflammatory effects, altered cholesterol metabolism so that TLR9 did not reach endosomes, where it is fully activated. Guanabenz

treatment reduced symptom severity in a mouse model of lupus. Because many lupus patients also suffer from hypertension, guanabenz and related compounds could have dual benefits.

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Eitan Israeli

**Capsule****Processing microRNAs for blood vessels**

Patients with hereditary hemorrhagic telangiectasia (HHT) are prone to hemorrhages and nose bleeds. This is usually (but not always) because of mutant proteins in a signaling pathway that regulates blood vessel formation. Jiang et al. found that zebra fish or mice deficient in the microRNA processing enzyme Drosha had vascular defects similar to those found in HHT patients. Rare mutations in *DROSHA*

were overrepresented in HHT patients who lacked the typical disease-associated mutations. Two of these mutants showed reduced activity and could not rescue the vascular phenotypes of Drosha-deficient zebra fish.

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**Capsule****Association of oral microbiome with risk for incident head and neck squamous cell cancer**

Case-control studies show a possible relationship between oral bacteria and head and neck squamous cell cancer (HNSCC). Prospective studies are needed to examine the temporal relationship between oral microbiome and subsequent risk of HNSCC. **Hayes** and co-authors tried to prospectively examine associations between the oral microbiome and incident HNSCC. The study included 58 patient cases from CPS-II (mean age 71.0 ± 6.4 years; 16 women [27.6%]) and 71 patient cases from PLCO (mean age, 62.7 ± 4.8 years; 13 women [18.3%]). Two controls per patient case (n = 254) were selected through incidence density sampling, matched on age, gender, race/ethnicity, and time since mouthwash collection. Head and neck squamous cell cancer cases and controls were similar with respect to age, gender, and race. Patients in the case group were more often current tobacco smokers, tended

to have greater alcohol consumption (among drinkers), and were positive for oral carriage of papillomavirus-16. Overall microbiome composition was not associated with risk of HNSCC. Greater abundance of genera *Corynebacterium* (fold change [FC] 0.58; 95% confidence interval [95%CI], 0.41–0.80;  $q = 0.06$ ) and *Kingella* (FC 0.63; 95%CI, 0.46–0.86;  $q = 0.08$ ) were associated with decreased risk of HNSCC, potentially owing to carcinogen metabolism capacity. These findings were consistent for both cohorts and by cohort follow-up time. The observed relationships tended to be stronger for larynx cancer and for individuals with a history of tobacco use.

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