

*Press release*

**December 11, 2019**

**Visual Snow Syndrome (VSS):**

## **Team in Bern discovers link to migraines**

**Researchers at the Department of Neurology at Inselspital, Bern University Hospital, and the University of Bern rank among the pioneers in describing and researching visual snow syndrome (VSS). Until recently, VSS was considered to be a disorder clearly distinct from migraine aura. A possible connection to migraines was suspected but not proven. The team in Bern has now succeeded in documenting an episodic form of VSS, which co-occurs with migraine attacks. A discovery that gives rise to many further questions.**

At the end of November 2019, a group of researchers in Bern published an article in JAMA Neurology (Journal of the American Medical Association) entitled “Episodic Visual Snow Associated with Migraine Attacks”. The article has the potential to turn existing knowledge about VSS upside down.

### **Visual snow syndrome (VSS) – perceived as permanent snow flurries in front of the eyes**

People with VSS suffer from a permanently altered visual perception. The main symptom is visual snow (VS), a visual disorder in and of itself that resembles the view of a poorly tuned analogue television or snow flurries. The disorder is constant and perceptible with either closed or open eyes. Normally, the flickering dots are black or white, less often coloured. Visual snow syndrome (VSS) occurs when additional visual disorders are present, especially palinopsia (e.g. afterimages, blurred movement), photophobia (sensitivity to light) and nyctalopia (impaired night vision). The visual disorder affects the entire visual field and persons of both sexes.

Experts only began discussing visual snow syndrome more intensively in the past few years. These discussions have been based on the detailed clinical descriptions of the disorder by Schankin and colleagues in 2013 and 2014: (doi: 10.1186/1129-2377-14-s1-p132 and [doi:10.1093/brain/awu050](https://doi.org/10.1093/brain/awu050)). Initially, visual impairment was considered to be extremely rare until the public and the medical profession became increasingly aware of it as more and more cases came to light. Because patients with VSS also suffer from migraines very frequently, VSS had long been (mis)interpreted as a persistent migraine aura. Unfortunately, in examinations without pathological findings, patients often receive a diagnosis of a mental disorder as well. In 2014, Schankin et al. published a more detailed report which was able to prove by means of imaging that VSS is not imagined and possibly develops in the area of the cerebral cortex responsible for normal visual processing (Schankin et al. 2014, doi: 10.1111/head.12378).

Even years after the first publications, knowledge about the pathophysiological causes of VSS and the connection to migraines remain very limited and truly promising therapeutic approaches are lacking.

### **Surprising discovery by neurologists in Bern**

In November 2019, a team of neurologists in Bern, led by PD Schankin, Prof. Bassetti, Prof. Fischer, and Dr. Hodak published a discussion paper in JAMA Neurology (doi: 10.1001/jamaneurol.2019.4050.) describing three cases of episodic visual snow closely linked to migraine attacks.

The patients had originally visited the clinic because of headaches. All three patients described symptoms of VS exclusively at the beginning or during a migraine attack. Their description matched the phenotype of VS, with the striking distinction that the attacks were not persistent and occurred exclusively together with migraine attacks. In principle, cases with continuous VSS were included in the study conducted to define VSS (cf. links to publications below). The fact that VS occurred episodically with migraine attacks extends our understanding of the relationship between migraines and VSS. It appears that VS is based on a mechanism similar to migraine attacks. The group in Bern proposes to distinguish between the two forms of VS: the permanent (continuous VS as part of VSS) and the temporary (episodic VS). The latter seems to be associated with migraine attacks. In order to improve our understanding of the extremely debilitating disorder VSS, the common mechanisms of migraines and visual snow should therefore be further investigated.

### **Department of Neurology and its tradition of innovation**

The Department of Neurology, led by the Chairman and Physician-in-Chief Prof. Claudio Bassetti, focuses on innovation and research. Together with the Sleep-Wake-Epilepsy-Center (SWEZ) and recently with the NeuroTec research unit, targeted research activities in the university and clinical fields areas are being advanced. Prof. Bassetti comments on the discovery of episodic VS: "Research in new disease patterns in neurology is an interdisciplinary and complex challenge. In the case of VSS, we have quite precisely described the clinical picture. However, we are still in the dark about its causes and the physiological relationships. We are striving to improve our understanding of this debilitating disorder, together with leading research teams around the world, in order to obtain the first approaches to promising therapies as soon as possible."

### **Publications:**

- Hodak J, Fischer U, Bassetti CLA, Schankin C. (2019): Episodic Visual Snow Associated with Migraine Attacks. JAMA Neurol. 2019 Nov 25, doi: [10.1001/jamaneurol.2019.4050](https://doi.org/10.1001/jamaneurol.2019.4050).
- Schankin, CJ, Maniyar, FH, Digre, KB, Goadsby, PJ (2014): 'Visual snow' – a disorder distinct from persistent migraine aura. In: *Brain* doi:[10.1093/brain/awu050](https://doi.org/10.1093/brain/awu050)
- CJ Schankin, F. Maniyar, J. Hoffmann, D. Chou, PJ Goadsby (2013): *Clinical characterization of "visual snow" (Positive Persistent Visual Disturbance)*. In: *The Journal of Headache and Pain*. Band 14, Nr. 1, 21. February 2013, P132, doi:[10.1186/1129-2377-14-s1-p132](https://doi.org/10.1186/1129-2377-14-s1-p132).
- J. Schankin, Farooq H. Maniyar, Till Sprenger, Denise E. Chou, Michael Eller, Peter J. Goadsby 2014: The Relation Between Migraine, Typical Migraine Aura and "Visual Snow" Christoph. Headache, American Headache Society; doi: 10.1111/head.12378

### **Expert:**

- PD Dr. med. Christoph Schankin, Senior Attending in Headache Clinic, Department of Neurology, Inselspital, University Hospital Bern

**Contact:**

- Insel Gruppe, Communication: +41 31 632 79 25, [kommunikation@insel.ch](mailto:kommunikation@insel.ch)

**Insel Gruppe**

Insel Gruppe is Switzerland's leading hospital group for university and integrative medicine. It offers comprehensive healthcare based on pioneering quality, research, innovation and education. The group's six locations (Inselspital, Aarberg, Belp, Münsingen, Riggisberg and Tiefenau) provide approximately 822 000 consultations and treat more than 65 000 in-patients per year. Insel Gruppe employs a staff of nearly 11 000 from 100 nations. It provides training for a wide range of professions and is the leading institution for further education for young physicians.