



## Letter to the Editor

## Al-Akhawayni's account of carotid sinus hypersensitivity

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Carotid sinus hypersensitivity (CSH) is an autonomic disorder which is described by at least 3 s of asystole and/or 50 mm Hg (or more) fall in systolic blood pressure in response to unilateral carotid sinus massage (CSM). CSH is an important but modifiable risk factor of syncope, drop attacks, and even death, especially in the elderly [1,2].

Historically, Parry is considered to be the first one who described the reduction of heart rate following carotid artery massage in 1799. Afterwards, in 1866, Czermak proved the decrease in blood pressure secondary to the carotid sinus stimulation. He performed this experiment on himself [3,4]. Some years later in 1920s, Hering defined the role of sensory receptors of carotid sinus in this process [4]. In 1930, Roskam presented the first recognized patient with CSH. After that, Weiss and Baker reported a group of 15 patients suffering from carotid sinus hypersensitivity in 1933 [1–5].

It is worth of interest to know that the medieval Persian scholar, Al-Akhawayni Bukhari, presented the phenomenon of loss of consciousness following carotid artery massage long before the above mentioned observations and studies on this issue [6].

Abū Bakr Rabī' ibn-e-Ahmad Akhawaynī Bukhārī (?–983 AD), commonly known as Al-Akhawayni Bukhari (Latin: Joveini), was a Persian medical practitioner who made several contributions to medicine (Fig. 1) [7]. He is the author of “*Hidayat al-Muta'llemin fi al-Tibb*” (A Scholar's Guide to Medicine) [8]. This book is served to be the most important medical text compiled in the 10th century and the first writing on the healing

arts in Persian language [7,9]. In addition to being familiar with the surviving medical knowledge of his predecessors, Al-Akhawayni approached to the art of medicine by relying on his own experiments. Therefore, he became a brilliant clinical observer [7–9].

Cardiovascular issues are one of the main subjects discussed in *Hidayat* (Guide) [7–9]. Among the chapters related to this field, one of them entitled “*Fi Zekr al-Sharaein*” (Discourse on the Arteries) is specifically devoted to the function and anatomy of the blood vessels. In this part of the book, Al-Akhawayni explains the possibility of loss of consciousness as a consequence of carotid artery massage as follows:



**Fig. 1.** The imaginary portrait of Al-Akhawayni Bukhari (?–983 AD) (Reproduced with permission from Yarmohammadi H, Dalfardi B, Ghanizadeh A. Al-Akhawayni Bukhari (?–983 AD). J Neurol 2013; doi: <http://dx.doi.org/10.1007/s00415-013-7000-5>).

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“... the artery which is located on the neck [carotid artery] moves toward the brain ... As I explained, if someone pressures this artery, the patient may lose consciousness ...” [6]. This clinical observation can strongly be corresponded to the patients with CSH.

Today it is supposed that *Avicenna* (980–1037 AD) presented the first description of CSH in the history of medicine; however, based on the above-mentioned passage, it could be claimed that for what may be the first time in the history of medicine, Al-Akhawayni clinically observed and reported the occurrence of CSH following CSM [6,10].

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