The mystery of yawning in physiology and disease, O. Walusinski, editor (S. Karger, Basel, Switzerland) 2010. 160 pages. Price: US$ 198.00
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This book is a compilation of studies and hypotheses based on various studies by scientists from different disciplines. It describes yawning as an ideal model for understanding a transitional behaviour and its relevance in neuroanatomy, neurophysiology, ontogenesis, phylogenies and social cognition. The chapters represent the role and function of yawning, and its implication in various behavioural aspects.

The first chapter deals with the Historical perspectives of yawning. It is stated that yawning precedes fever and that it facilitates the escape of accumulated disease along with the expelled air. In 18th century, Johannes de Gorter (1689-1762), reported yawning to a need for faster blood circulation. This idea persisted for two centuries. Almost all authors reported that yawning improved brain oxygenation. In the early 19th century many researchers reported the association of yawning with some disease states like hysteria, temporal-lobe epilepsy, gout, *etc*. Towards the end of 19th century, Jean-Louis Brachet, one of the eminent physiologists, related the concept of the respiratory role of yawning. Rene Trautmann (1875-1956) was the first person to study yawning scientifically and concluded that yawning improves blood oxygenation. This supported the earlier findings. By 1924, Edouard Claperede (1873-1940) reported for the first time that yawning has a diencephalic origin, which initiated today's neuromuscular theory and challenged the older ventilatory concept. By 1960s the pharmacological studies found the role of ACTH and MSH in yawning. In 1980, the central role of paraventricular nucleus of hypothalamus was identified. In 1980s and 1990s more of behavioural studies were conducted on non-human primates. Now neurohormonal studies have established yawning as a marker for D_3 dopamine receptors and the behavioural and imaging studies have found its role as a non-verbal language and emotion (like empathy).

In the chapter on "Yawning throughout life", the authors studied the frequency and time course changes of spontaneous yawning across the life span. They state that yawning become prominent by 12-14 wk of foetal life and decreases by 31-40 wk of post-conceptional age (during the day). The frequency of yawning decreases gradually from infancy to adulthood. It becomes diurnal by adulthood. Contagious yawning develops later in life (4-5 yr) and appears to be independent from the spontaneous yawning.

O. Walusinski, in his study entitled "Fetal Yawning", describes studies based on 4-D sonography which state that foetal yawning helps to verify the progress of brain stem maturation. Yawning and limb movements alternate with periods of myoclonic twitches in foetal life, which represent the premature form of sleep-wake cycle. Yawning, like REM sleep, helps in brain maturation through activity-dependent developmental mechanisms.

In "Sleep, Sleepiness and Yawning", the authors demonstrate the relationship between yawning, sleep and sleepiness. Older people yawn less than younger people mainly in the morning and mid-afternoon.

The chapter entitled "The Interplay between Yawning and Vigilance: A Review of Experimental Evidence", explains that though behavioral and EEG studies before and after yawning could support the notion that it occurs during states of low vigilance; studies analyzing autonomic nervous system and EEG-based studies could not prove that yawning increases the arousal state.

In "Non-human primates: A comparative developmental perspective on yawning", the author describes yawning among Old world monkeys as a non-verbal communication. Experimental evidence shows that chimpanzees also exhibit contagious yawning as in case with humans. In another chapter, A. Moyaho and J. Valencia describe a study which demonstrates that punishment-induced fear reduces the frequency of yawning among rats.

A.C. Gallup describes the thermoregulatory mechanism of yawning through a well-documented study that used thermocoupled probes in rat. Thus, it supports the hypothesis that yawning provides cerebral cooling. G.T. Collins and J.R. Eguibar elaborate on the neuropharmacology of yawning where they state that not only cholinergic system but also a variety of neurotransmitters are involved in the induction and regulation of yawning.

In a separate chapter, S. M. Platek describes his study on the relationship between the speed in identifying one's own face, performance on a set of theory of mind stories, and susceptibility to contagious yawning. In the chapter, "Developmental and comparative perspectives of contagious yawning", the author relates two studies done on children with Autistic spectrum disorders

(ASD) using video as well as audio stimuli to asses contagious yawning, and suggested impairment in their mechanism. They further found that the reduced spontaneous fixation on the eyes might be one of the reasons.

The chapter "Exploring yawning with neuroimaging" reviews the neuroimaging studies which could not find consistent activation of mirror neuron systems in yawning. R. Meenakshisundaram and others, in their chapter, describes the clinical phenomenon of involuntary movements of paralyzed upper limbs in hemiplegics during yawning known as 'Parakinesia brachialis oscitans'. They explain this phenomenon to be due to a loss of cortical control which in turn causes expression of a primitive reflex, *i.e.* automatic synchronization of ventilatory cycle with gait (normally observed in quadrupeds and absent in bipeds). This is attributed to the movement of diaphragm during yawning causing the lateral reticular nucleus of medulla to stimulate the paralyzed arm via an extrapyramidal pathway, which is uninhibited by the ischaemic lesion. Also emotional motor activity would contribute to it.

In the last chapter, "Associated diseases", O. Wallusinski describes the usefulness of yawning in diagnosing certain disease condition, and also sometimes in relieving disorders. The generalized muscular stretches associated with yawning could be used as an anti-stress aid in anxiety states and insomnia. Yawning may also be an early sign of hypoglycaemia in diabetics on insulin. In deep coma patients, occurrence of repetitive yawning is a sign of herniation (a grave prognostic sign). Intracranial hypertension associated with stroke, tumour or trauma could present with yawning as the initial sign. ENT problems associated with eustachian tube dysfunctions can be symptomatically improved by yawning. Psychogenic dysphonia and vocal fatigue can be improved through yawning-whistling technique.

This book is a voluminous compilation of scientific facts and studies about the previously less known physiological phenomenon of yawning. From a physiologist's point of view, some of the studies mentioned in this book were quite interesting; especially the phases through which yawning pass through during ontogenesis. The observation that yawning and limb movements, and period of mayoclonic twitching (against a background of muscle atonia) represent respectively sleep and wakefulness in foetal life stresses the role of yawning in arousal of developing foetal brain. But its role in arousal reinforcement was not convincingly proved by any of the studies mentioned in the book. However, the consistency of yawning with sleep rhythm of infants could be used to learn more about the early sleep-wakefulness mechanisms. The diagnostic significance of this readily observable phenomenon is well documented in this book. Besides being an early sign/symptom of various diseases in children and adults, it also finds use during 3-D and 4-D sonography for early detection of foetal anomalies. The physiological significance of the thermoregulatory effect of yawning in humans was not clear. The historical perspectives of yawning, though exhaustive, were quite informative.

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Clinical update on inflammatory disorders of gastrointestinal tract (Frontiers of gastrointestinal research, vol. 26**),** Mayerle J, Tilg H, editors (S. Karger, Switzerland). 2010. 216 pages. Price: US$ 182.00
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This publication provides the latest data on inflammatory disorders of the gastrointestinal tract, liver and pancreas. This book written in a lucid readable manner by 51 contributors in 18 chapters brings home, yet again, the fact that the inflammatory disorders of the digestive tract and the liver affect a large proportion of the patients and impose a significant economic and health burden on society. The book has an attractive presentation containing 25 figures which make understanding of the facts, especially the pathogenesis and diagnostic work up, more clearly. The 18 tables included in the book are valuable for easy and quick reference of the treatment options for the various disorders discussed.

Inflammatory diseases of the gastrointestinal tract no longer include only infectious disorders which have long established anti-infective treatments available, but also encompass a number of complex immunological disorders which are currently attracting scientific attention. This volume covers emerging diseases such as microscopic colitis or NAFLD (non alcoholic fatty liver disease) that have only recently moved