

REVIEWS OF EDUCATIONAL MATERIAL

the symptoms develop over minutes; with epilepsy, the symptoms progress over seconds; and with transient ischemic attacks, the symptoms occur suddenly, without progression. In another example, the symptom complex of headaches always on the same side of the head and neurologic symptoms always on the opposite side is a warning of a possible underlying, structural, intracranial lesion. The persistence of neurologic symptoms between headaches is another such warning sign. An addition that would be nice in this section would be a discussion of guidelines regarding the ordering of brain imaging studies—Do all recent onset, recurrent headaches require computed tomography or magnetic resonance imaging?

The following sections include extensive reviews of the pharmacologic treatment of migraine—both abortive and preventive. In these two chapters, the author provides analysis and assessment of the studies that examine the efficacy of the various drugs. Most pain-practicing anesthesiologists will find these sections too detailed. I would have preferred more discussion on the mechanisms of action. Why is it that tricyclic antidepressants, serotonin antagonists, and calcium-entry blockers not only diminish the intensity of migraine attacks, but also diminish migraine attack frequency? Particularly useful elements of these chapters are his tables summarizing the efficacy studies. The table on abortive medications suggest that simple NSAIDs, with an efficacy of 60%, may be best as a first treatment, and that the highest efficacy is obtained with subcutaneous sumatriptan at 80%. The table of preventative medications indicates the highest efficacy for nadolol at 70%.

In chapter six, Dr. Spierings provides a very useful review of trigger factors, which includes menstrual cycling and hormones, stress, weather, and dietary products. Many of the cited studies make use of headache diaries. It would have been helpful if the author provided more guidance and instruction on the clinical use of such diaries (perhaps even in the earlier diagnosis chapter).

Dr. Spierings concludes with sections on pediatric migraine, cluster headache, and paroxysmal hemicrania. These are rarely seen in most Pain Management Clinics, yet these conditions are within the scope of algology. The practitioner should be familiar with the information in these brief chapters.

I was disappointed by the absence of any discussion of biobehavioral techniques, such as relaxation training and biofeedback, for the treatment of migraine. There is an extensive literature regarding the potential of these techniques as adjuncts and possibly primary treatments of migraine and other headaches. I would have enjoyed a critical review of these studies by Dr. Spierings. Similarly, Dr. Spierings mentions the roles of exercise and sleep disturbance as potential migraine triggers, but does not extensively review or discuss the importance of sleep regulation and exercise in the treatment and prevention of migraine attacks.

The summarizing tables and the complete index make this book a valuable reference text. It is best for those that have at least a little background or experience with general headache assessment and treatment. I would not recommend it to the expert headache practitioner (unless they are looking for a nice review of medication efficacy studies). The price is a little steep at \$45, but perhaps the publishers will release a less costly, softcover edition. Overall, this is a worthwhile and easily readable book for the pain-practicing anesthesiologist.

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Neuromuscular Block. by Stanley Feldman. Woborn, MA, Butterworth Heineman, 1996. Pages: 180. Price: \$65.00.

Stanley Feldman is a senior academic anaesthetist in London, England, who has focused on mechanisms of action of neuromuscular relaxants throughout his 35-year career. He has written this monograph as a description of his query into explanations of relaxant action that differ from the classical competitive theory of Paton and Waud. He differs because he believes that what is presented as fact in classical theory leaves critical questions unanswered. Feldman's virtually sole focus into mechanisms, forming the basis for his alternative explanation, lies in examination of relaxant effects in the human forearm briefly isolated by a tourniquet. He first published his approach and theory in *Proceedings Royal Society Medicine* (1970; 63:692-5), and has propounded it since then. Feldman postulates a reservoir in or near the endplate proper that holds relaxant molecules, with finite limited capacity and gradual release, and uses this format to explain various facets of relaxant phenomena. The principle question is whether there is supportive evidence for his postulated special reservoir, or whether the receptor occupancy theory of competitive antagonists provides a reasonable answer.

Feldman writes well, and clarifies concepts quite well: "The term occupation is somewhat misleading: in a dynamic process it reflects a higher random chance of reaction . . . rather than physical occupancy. . ." (footnote, p 101). His early chapters, History, The Neuromuscular Junction, and Neuromuscular Transmission are brief, lucid, straightforward, comprehensive, highlighted by excellent figures, and provide some superb informative reading.

However, after the first few chapters, quality is uneven, as numerous deficiencies, inaccuracies, use of jargon, and typographic errors cloud the monograph. For example, he blurs the distinction between actions of depolarizing and nondepolarizing agents, in part by not considering Salpeter's saturated disc theory of the action of acetylcholine, or the fact that only 15% of acetylcholine receptors need to interact with an agonist such as acetylcholine or succinylcholine to be effective, or that hysteresis occurs in nondepolarizing blockade, or that 75% of acetylcholine receptors require interaction with a drug for evident blockade.

He repeatedly seems to regard "biophase concentration" as though it were receptor occupancy, which it isn't. Regarding neuromuscular blockade, he appears to confuse the linear portion (the relation between dose and concentration) with the nonlinear portion (the relation between concentration and effect.) He appears to be unaware that analysis of relaxant responses depends on the phase of recovery.

Feldman uses selective evidence to support his ideas. For example, when Matteo *et al.* published data on plasma concentration of curare *versus* blockade (ANESTHESIOLOGY 1974; 41:440-3), Feldman (and in addition, independently, Aaron Kopman—same citation) criticized his reasoning and findings (ANESTHESIOLOGY 1975; 42:644-5). Barbara Waud (ANESTHESIOLOGY 1975; 43:381-2) defended Matteo, demonstrating that the results were consistent with competition theory. It is interesting that Feldman, in his monograph, does not cite

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these exchanges when he restates his criticism of Matteo's conclusions (p 40).

Feldman includes a 1.5-page chapter on pharmacokinetics and none on pharmacodynamics. He discards pharmacokinetic and pharmacodynamic analyses in drug interactions with jargon: "Various complex mathematical formulae based on unverifiable calculations of receptor sensitivity and speculative rate constants have been devised to support this hypothesis (p 39)," suggesting he does not understand the basic work in this field. He cites the "best" pharmacokinetic evidence for this theory ("To explain this phenomenon it is therefore necessary to invoke a biophase binding site; this is recognized in the only adequate pharmacokinetic model.²⁰" —p 112) with a nontraceable reference (RH Epstein, RR Bartkowski, *Anesth Analg* 1993; 76:597). Feldman apparently means Bartkowski RR, Witkowski TA, Azad S, Lessin J, Marr A, *Anesth Analg* 1993; 77:574-8, or else either of two abstracts (*Anesth Analg* 1992; 74:S17 or S88). The full article refers to the quicker onset of lower potency nondepolarizing blockers.

When Feldman uses jargon to support his opinions, he favors "... it is reasonable to suppose. . ." or similar phraseology that begs the question. Or, in kind, "it is *sensible*, therefore, to consider the nature of these experiments in some detail so that one can *better appreciate the meaningfulness* of the results" (p 43, line 3, italics mine). Or, finally, "It is evident that a consequence of biophase binding. . ." (p 155 line 14). The forgoing are examples of some of the problems in this monograph.

Feldman has documented his several-decade approach to mechanisms of action of muscle relaxants with some excellent descriptions and discussions. It is unfortunate that he fails to incorporate a balanced view of this field by including, and, as necessary, critiquing, a modern pharmacodynamic understanding of the neuromuscular junction.

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