

شبكة المعلومات الجامعية







شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

## جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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# بالرسالة صفحات لم ترد بالاصل





# Retrospective study of postoperative pain management in pediatrics.

THESIS

Submitted for the partial fulfillment of Master Degree

In Anesthesiology

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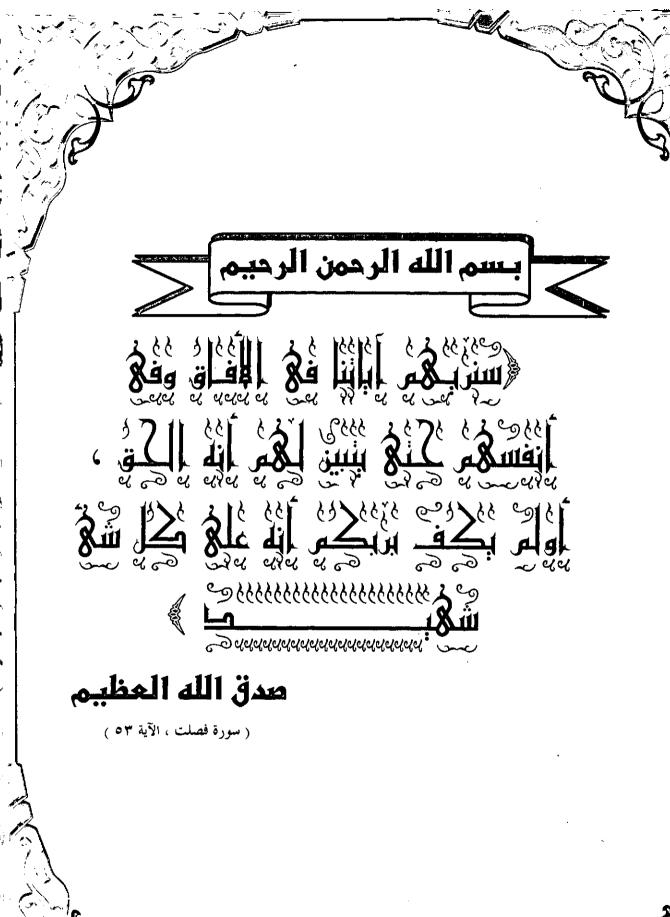
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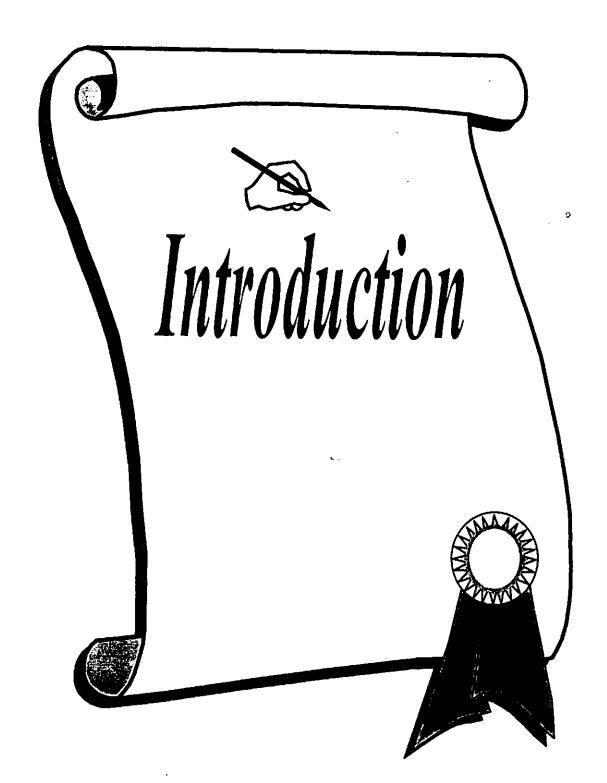
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 $v = (\psi_{1} g_{1} - \varphi_{2}^{A_{1}}) \cdot \varphi_{1}$ 

#### INTRODUCTION

Pain is a protective mechanism designed to alert the body to potentially injurious stimuli. The International Association of Pain has been defined pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage". (1)

Perception of pain like perception of other sensations is a neuro-physiological process that has special structural, functional and perceptual properties and accomplished by means of relatively simple neural, receptive and conductive mechanisms that are specific for pain.<sup>(2)</sup>

The development of pain in the fetus has been extensively studied. Pain pathway and neuromodulators of pain are all present at birth (Table 1). Cutaneous sensory perception appears in the perioral area of the human fetus as early as the 7th week of gestation and spreads to include all cutaneous and mucous surfaces by the 20th week. Myelination of tracts in the C.N.S. associated with nociception occurs in the 2nd and 3rd trimester of gestation. Functional development of the cerebral cortex is suggested by various features of fetal and neonatal electroencephalogram.

Substance P and its receptors are detectable in the fetal dorsal horn at 12 to 14 weeks of gestation. Endogenous opioids are present in the plasma

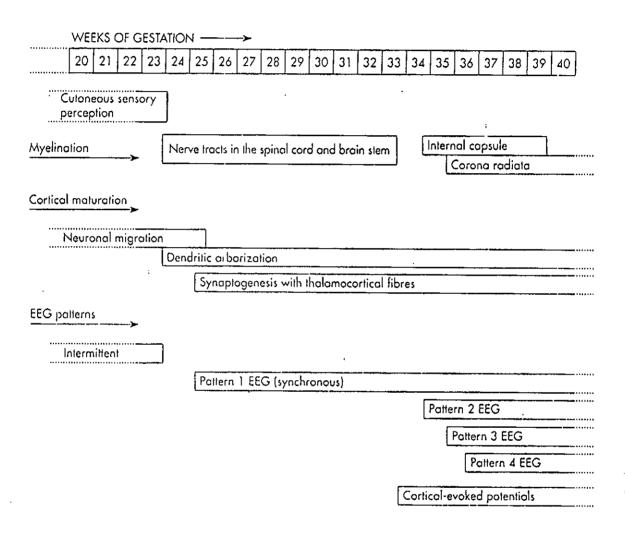
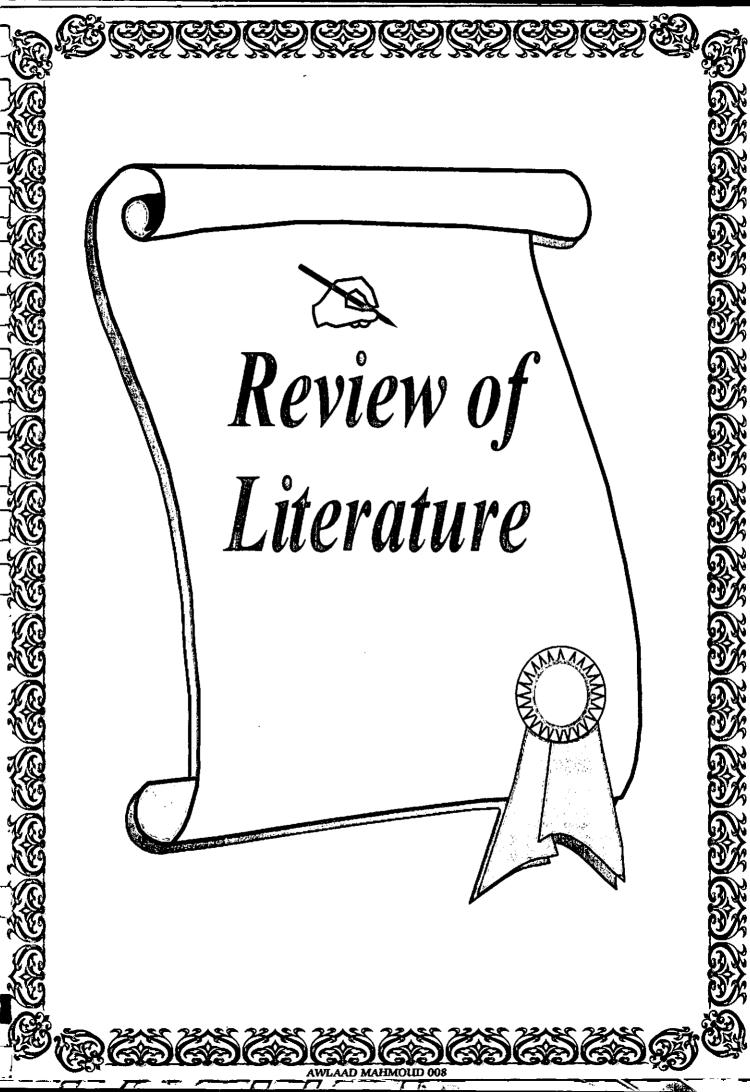


Table (1): Maturation of pain pathways in the human fetus and neonate. (3)

and cerebrospinal fluid of term infant and concentration of  $\beta$ -endorphin increase in response to stress. In addition, in the human fetus development of endogenous opioid receptors occur in utero. (7)

It is now clear that even low birth weight infants have hormonal and metabolic responses to painful procedures and these responses can be ameliorated by administration of anesthetic or analgesic agents. Moreover, the use of such agents to reduce pain during and after neonatal surgery has been reported to reduce postoperative complications. (8)



## REVIEW OF LITERATURE PHYSIOLOGY OF PAIN

#### **Nociception:**

It is a group of processes that lead to perception of pain. Nociception is made up of four processes (Fig.1): (9)

- 1) Transduction: is the process whereby noxious stimuli release numbers of algesic neurotransmitters and translate these noxious stimuli into electrical activity at the sensory nerve endings. The primary structure that accomplishes this process is the nociceptors (located in skin, muscle, viscus and etc.). In cutaneous tissue there are subtypes of receptors including mechano-receptors, polymodal nociceptors, and several types of thermoreceptors.
- 2) Transmission: refers to the propagation of impulses throughout the sensory nervous system. The neural pathway subserving transmission is composed of three components: a) primary sensory afferent neurons that project to the spinal cord, b) ascending relay neurons projecting from the spinal cord to the brain stem and thalamus, and c) thalamocortical projections.
- 3) Modulation: by which, the nociceptive transmissions are modified by a number of neural influences.
- 4) Perception: transduction, transmission, and modulation are developed into the subjective, sensory, and emotional experience of pain.