THE EFFECTS OF BUTORPHANOL AND MEPERIDINE USED AS ANALGESICS DURING LABOUR

"COMPARATIVE STUDY"

THESIS

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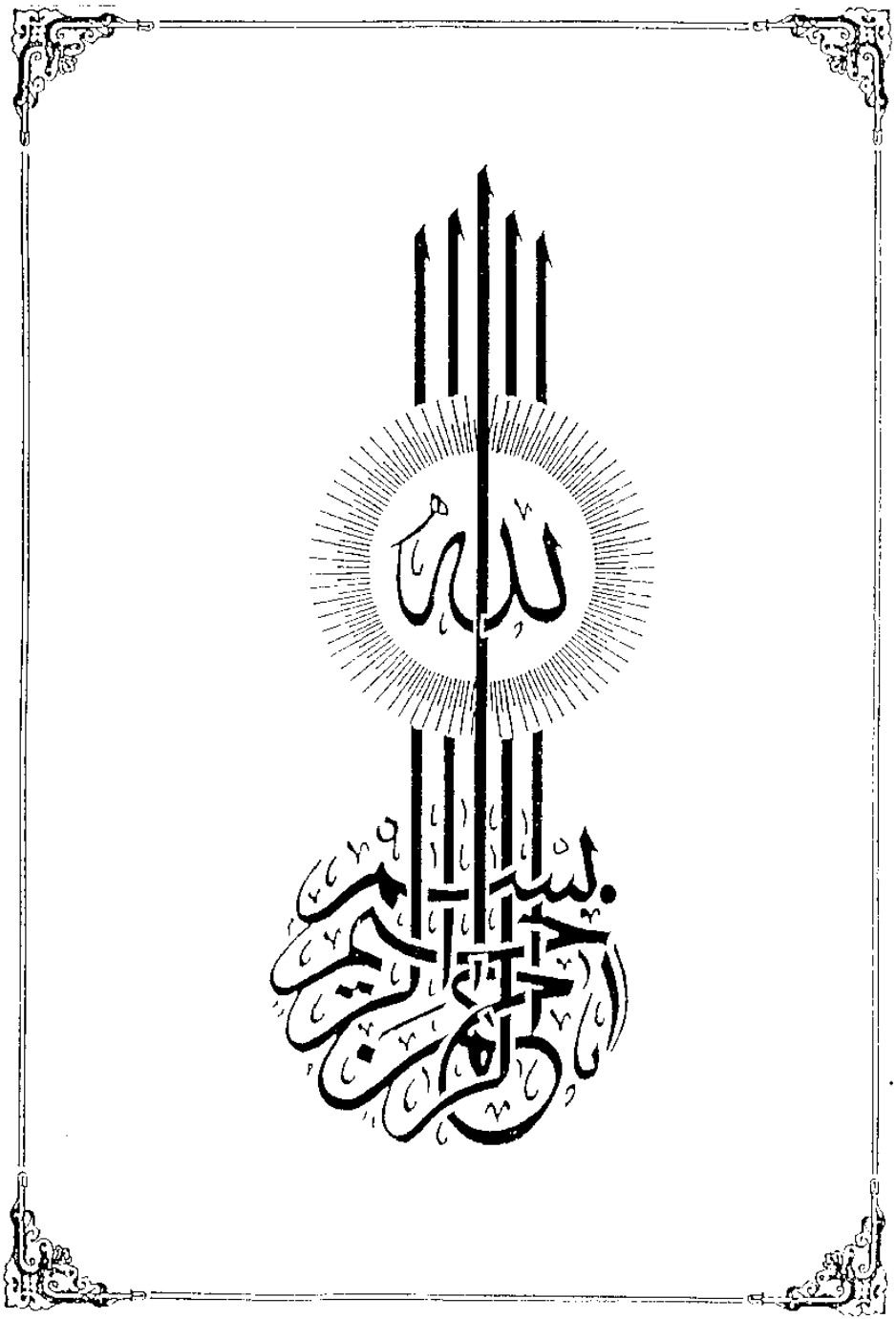
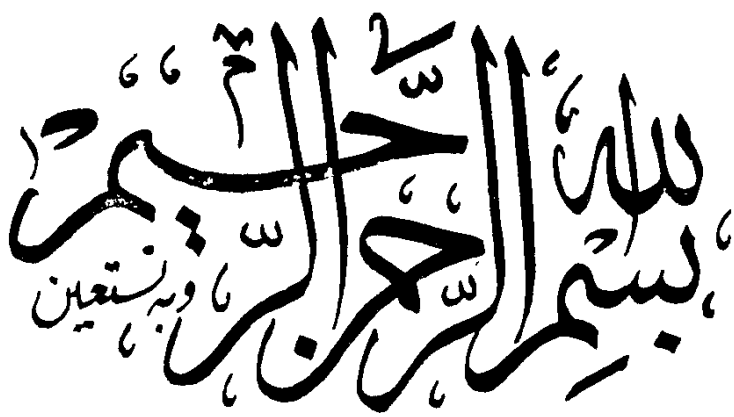
TO EVERYONE WHO BELIEVES IN EGYPT

WORKS, LIVES AND DIES FOR HER

TO EVERY TRUE EGYPTIAN





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Introduction

INTRODUCTION

The narcotic analgesics and their antagonists form a series of drugs that range from highly effective and highly addictive, pure narcotic analgesic (Morphine) to the pure narcotic antagonist (Naloxone) a drug devoid of analgesic activity. For many years, the objective of clinical research in the area of analgesia has been to identify analgesic agents with at least the efficacy of morphine, but lacking its addictive and respiratory depressant properties. There are several reasons behind the search for a synthetic analgesic devoid of these properties. With the shortage in the world supply of opium, there is a need for potent, totally synthetic analgesics.

Completely synthetic compounds of the benzomorphan series, such as cyclazocine and pentazocine, have been developed. Even though these agents have a reduced liability for producing respiratory depression, constipation and urinary retention, they do exhibit psychomemetic effects which limit their clinical usefullness. Dobkin, et al., (1974) noted

that pentazocine, although not nearly as psychomimetic as cyclazocine, was much less potent on a unit weight basis than morphine, and in addition its efficacy in the treatment of severe post-operative pain was limited by the relatively high incidence of side effects encountered at doses required to produce adequate pain relief.

With regard to obstetric analgesia for the relief of the prepartum pain, with a minimal effect on the mother and the newborn, a comparative study by Scanlon, et al., (1974) was done between the newborn of mothers with epidural block with lidocaine or mipivacaine, and another group without epidural anaesthesia, and showed that the epidural block group was characterized as (floppy but alert), and scored less well in the tests designed to assess muscle strength and tone. However, Cork (1977) stated that the neurobehavioural assessment made of infants within 4 hours of delivery revealed that infants born to mothers receiving pethidine and promazine showed significantly worse overall scores, than babies of mothers receiving either no analgesia or a lumbar epidural, using bupivacaine.

In reported data (Morgan and Bulpitt et al., 1982) on the relative effectiveness of different methods of obstetric anaesthesia in consecutive series of 1000 women who had a vaginal delivery, patients received one of the following categories of analgesia: entonox, pudendal block, pethidine, pethidine and entonox, epidural analgesia alone, epidural analgesia and entonox, pethidine and epidural analgesia, and a group without analgesia. The data revealed that patients who had an epidural block had a significantly longer labour than those who did not, and patients receiving only epidural block had the lowest average pain score and the highest proportion of women claiming to have had no pain.

However, the accidental dural puncture in obstetric patients as a complication of epidural analgesia, resulting in severe post spinal headache as a common complication, (Brownridge, 1983) requires careful management in the following 24 hours by an epidural infusion of 1.5-2L fluids, with oral analgesia and/or the use of an epidural blood patch.

One approach to the solution of the problem of effective analgesia with minimal effects on the mother and the newborn, has been the development of synthetic, narcotic, antagonist analgesic in the morphinan series. Monkovic (1972) reported the total synthesis of butorphanal tartarate (Levo-N-Cyclobutylmethyl-3-14-B dihydroxymorphinan). The results from animal studies indicate that the analgesic activity of butorphanol tartarate is four times more than that of morhpine (Pircio, et al., 1976), and approximately forty to fifty times more potent than pethidine, (Galloway, et al., 1977) in its analgesic properties. Kallos (1976) stated that both butorphanol tartarate and pethidine (meperidine) depress the respiratory centers by the equianalgesic dose to the same degree, but the increasing dose of pethidine produced more depression of respiratory centers. In contrast, increasing the dose of butorphanol produced no more depression of the respiratory centers, suggesting a ceiling effect, and both drugs were antagonized by naloxone.

Butorphanol is fairly transferred through the placental barrier. Caruso et al., (1978) and Quilligan et al., (1980), indicated that due to

the low incidence of side effects with butorphanal, its lack of interference with the process of labour, and its minimal effects on the condition of the newborn infant, butorphanal tartarate is a safe and effective analgesic for use during labour.

AIM OF THE WORK

In comparison with meperidine, this study was designed to assess the analgesic effect of butorphanol and to observe clinically, the maternal cardiorespiratory functions, mental alertness and cervical dilation.

In the newborn, the observation of Apgar Score and neurobehavioural responses were done. The arterial blood gases and pH were estimated for both mother and the newborn.

Review Of The Literature

REVIEW OF LITERATURE

INNERVATION OF THE FEMALE GENITAL TRACT

The female pelvic viscera are under both nervous and hormonal control. The nervous control is derived primarily from the hypothalmus through the reticular formation where the descending pathways interact with ascending influences from the pelvis. Thus the higher centres are concerned with the control of the balance between the effects of the two peripheral autonomic divisions, the sympathetic and the parasympathetic systems. They should not be considered as antagonistic to each other, as in many instances they are synergistic and work together under the control of the descending pathway to achieve their physiolcgical function.

Efferent Pathway

The sympathetic centres for the female pelvic viscera lie in the lower thoracic and upper lumbar segments of the spinal cord. From here pre-ganglionic fibers pass through the ganglia of the sympathetic trunk to the aortico-renal plexus where they finally synapse. A part of the aortico-renal plexus extends along the ovarian artery as the ovarian plexus. The superior hypogastric plexus or pre-sacral nerve