بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــســـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

FLUID AND ELECTROLYTE BALANCE IN PAEDIATRIC PATIENTS

Essay

SUBMITTED IN PARTIAL FULFILLMENT OF THE DEGREE OF MASTERSHIP *IN ANAESTHESIA*

By

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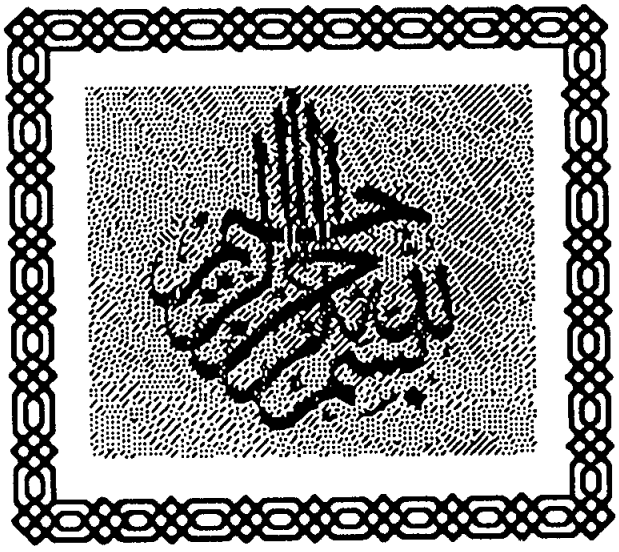

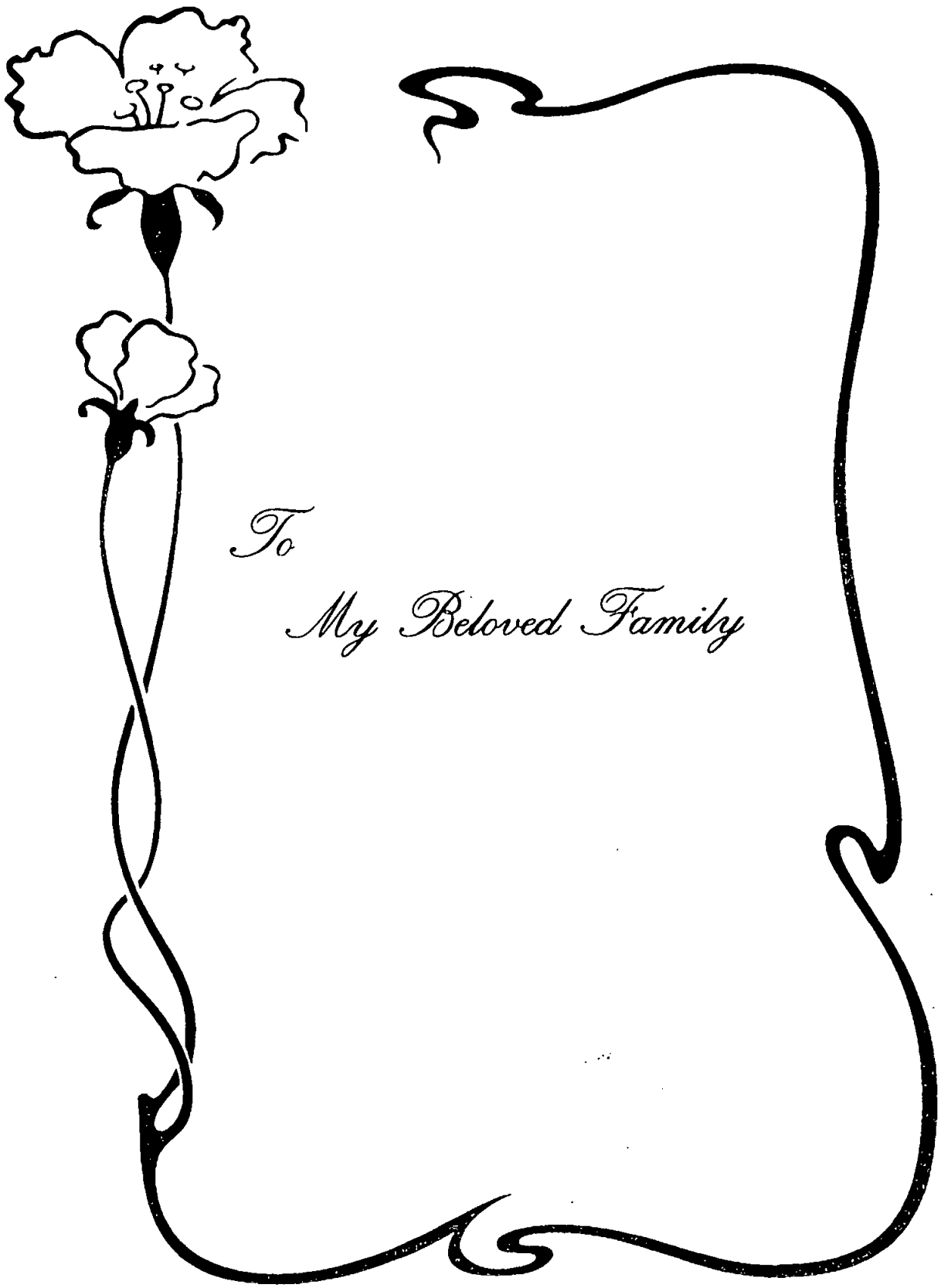

To

My Beloved Family

Acknowledgement

"Thanks to God before and after"

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INTRODUCTION

Preoperative fluid management of infants and children continue to be a controversial among anaesthesiologists, surgeons and pediatricians. For adequate preoperative care of the child, a thorough knowledge of fluid and electrolyte physiology is necessary.

Anaesthesia for infants and children requires an understanding of those things that make children different from adults and how these differences affect the anaesthesiologist's ability to provide adequate surgical conditions and homeostasis during surgery (Gregory, 1981).

The management of fluid and electrolyte balance in infants is very much more critical than in adults. Requirements vary with age and the permissible margins of errors are narrow.

Many of the fluid schedules prescribed for surgical causes of body fluid depletion are identical to those which are appropriate in the management of acute gastroenteritis.

This has resulted in over-generous amounts of water being given which are particularly undesirable in surgical cases.

Infants with intestinal obstruction are not usually febrile and surgery corrects their lesions and induces postoperative release of antidiuretic hormone. In these circumstances, too much water readily provokes water intoxication. Infants, particularly in the first few months of life, have a greatly increased rate of turnover of water. Their body water content is greater than an adult's when related to body weight, but it is about half the adult figure if related to surface area: as surface area is more closely related insensible loss, an infant losses water twice as fast relatively as an adult when intake ceases (Horsey, 1978).

A person can survive for 1 or 2 weeks without water, but the operating theater is not the place for this fact to be put to the test, yet there is still a prejudice against the administration of salt and water to the pediatric patient, a lingering fear of so-called salt intolerance. The result is that an infant can arrive in the operating theater in a somewhat dehydrated state. Comparison of morbidity is difficult as there are many other variables including, of course, the length of surgery. However, it is accepted that the morbidity of a second operation, a second stress, will be less if there is no deficiency of volume resulting from the first stress.

A newborn infant can survive an anaesthetic without an intravenous infusion, but in these days of longer, more

complex operations, increased postoperative problems and the increase in the actual number of procedures for one patient, the establishment of a line preoperatively is regarded as essential. Frequently, the acquisition of this line is a difficult part of the care, and most difficult when most needed.

Other complicating practical factors have to be addressed in the assessment of fluid balance, laboratory data, which are liable to errors of sampling technique, storage and laboratory determination, must always also be interpreted along with the history and physical examination of the patient.

There is also the impossibility of communication with the really young, and consequent reliance on a third person to provide and probably interpret vital information.

There is also many occasions, especially if the surgery is urgent and the infant is sick, when the first real examination by anyone on the operating team is immediately before the operation, without an opportunity to observe the baby for a few days while the diagnosis is being made.

Rapid assessment and treatment will then occur, and this is not the ideal approach (Bennett and Bowyer, 1989).

Food and water fuel our metabolism. Giving children enough fluids, salt and calories should be the simplest way to

combat the greatest worldwide killers of children, dehydration and malnutrition.

The ability to manage fluids, electrolytes, and nutrition is essential in both pediatrics and anaesthesiology (Siker, 1994).

Intraoperative fluid losses should be corrected as they occur. Although blood is the most obvious and commonly lost fluids during surgery, fluids can be lost by many other routes (e.g. evaporation, ascites, effusions and bowel).

Monitoring of the physiologic response to fluid requirements administration is ultimately more important than estimation of fluid requirements. When the estimated fluid and the physiologic response are not congruent, additional consideration should be given to other, perhaps occult or previously unconsidered, changes in fluid status. Fluid administration should be titrated to physiologic end points or goals.

These goals include elimination of tachycardia, restoration of adequate blood pressure, skin perfusion, filling pressure, cardiac index, end tidal carbon dioxide, venous oxygen and carbon dioxide levels, oxygen consumption and oxygen extraction ratio, glomerular filtration rate, and urine flow. Most of these parameters are similar during anaesthesia (Tonnesen, 1990).