بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY

Effect of Intravenous Ondansetron on Hemodynamics after Spinal Anesthesia in Patients undergoing Total Knee Replacement

Thesis

Submitted for Partial Fulfillment
of master Degree in **Anesthesiology**

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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

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Magdy Ali Ahmed Mohamed

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Abb.	Full term
AKA	*AdamKiewicz Artery*
ASA	*Anterior Spinal Artery*
BJR	*Bezold–Jarisch Reflex*
BMI	*Body Mass Index*
BP	*Blood Pressure*
CSF	*CerebroSpinal Fluid*
FDA	*Food and Drug Administration*
ICP	*Intracranial Pressure*
IV	*IntraVenous*
MAP	*Mean Arterial Pressure*
PE	*PhenylEphrine*
PICA	*Posterior Inferior Cerebellar Artery*
PO	*Per Oral*
PONV	*PostOperative Nausea and Vomiting*
PSA	*Posterior Spinal Arteries*
SAIH	*Spinal Anesthesia Induced Hypotension*

INTRODUCTION

Hypotension following spinal anesthesia is a common physiological complication with an incidence ranging from 25-75% among general population. The spectrum of morbidity associated with hypotension may include a higher incidence of nausea, vomiting, dizziness, aspiration, syncope and cardiac arrhythmia ***(Sukhminder et al., 2013).***

Among the mechanisms causing hypotension during spinal anesthesia is sympatholysis inducing a decrease in systemic vascular resistance as well as the Bezold-Jarisch reflex. The latter becomes activated by decreased venous return to the right heart, triggering receptors in the cardiac wall, leading to vasodilation, bradycardia and hypotension. Among the receptors involved are chemoreceptors responding to 5-hydroxytryptamine3 (5-HT3, serotonin) ***(Michael et al., 2016).***

A number of measures for prevention and treatment of spinal-induced hypotension are used in clinical practice such as preloading and coloading with crystalloid and/or colloid infusion and administering inotropes and vasopressors such as ephedrine and norepinephrine ***(Sklebar et al., 2019).***

Ondansetron is one of the new classes of 5-HT_3 receptor antagonists has been safely used to blunt the Bezold–Jarisch reflex that may result in less bradycardia and hypotension in patients undergoing spinal anesthesia ***(Sherif et al., 2018).***

General anesthesia has been the dominant form of anesthesia utilized for total knee arthroplasty in the past, but regional anesthetic techniques are on the rise. Multiple studies have shown the potential for regional anesthesia to improve patient outcomes such as a decrease in intraoperative blood loss, length of stay and patient mortality ***(Zachary et al., 2017).***

Aim of the Work

The aim was to study the effect of intravenous ondansetron on hemodynamics after spinal anesthesia in patients undergoing total knee arthroplasty.

Chapter 1

ANATOMY OF SPINAL COLUMN

The spine is composed of the vertebral bones and fibrocartilaginous intervertebral disks. There are 7 cervical, 12 thoracic and 5 lumbar vertebrae. The sacrum is a fusion of 5 sacral vertebrae and there is a small rudimentary coccygeal vertebrae. The spinal column normally forms a double C, being convex anteriorly in the cervical and lumbar regions. Ligamentous elements provide structural support and together with supporting muscles help to maintain the unique shape. Ventrally, the vertebral bodies and intervertebral disks are connected and supported by the anterior and posterior longitudinal ligaments. Dorsally, the ligamentum flavum, interspinous ligament and supraspinous ligament provide additional stability ***(Egan and Talmage, 2005).***

As the spinal cord normally ends at L1, lower nerve roots course some distance before exiting the intervertebral foramina. These lower spinal nerves form the cauda. Therefore, performing a lumbar puncture below L1 in an adult avoids potential needle trauma to the cord ***(Lee et al., 2004).***

The spinal space is thought to be smaller and less compliant with advancing age, extending the distribution of the injected local anesthetic. Thus, doses are reduced in older patients to prevent amore cephalad spread of local anesthetics ***(Edward, 2000).***

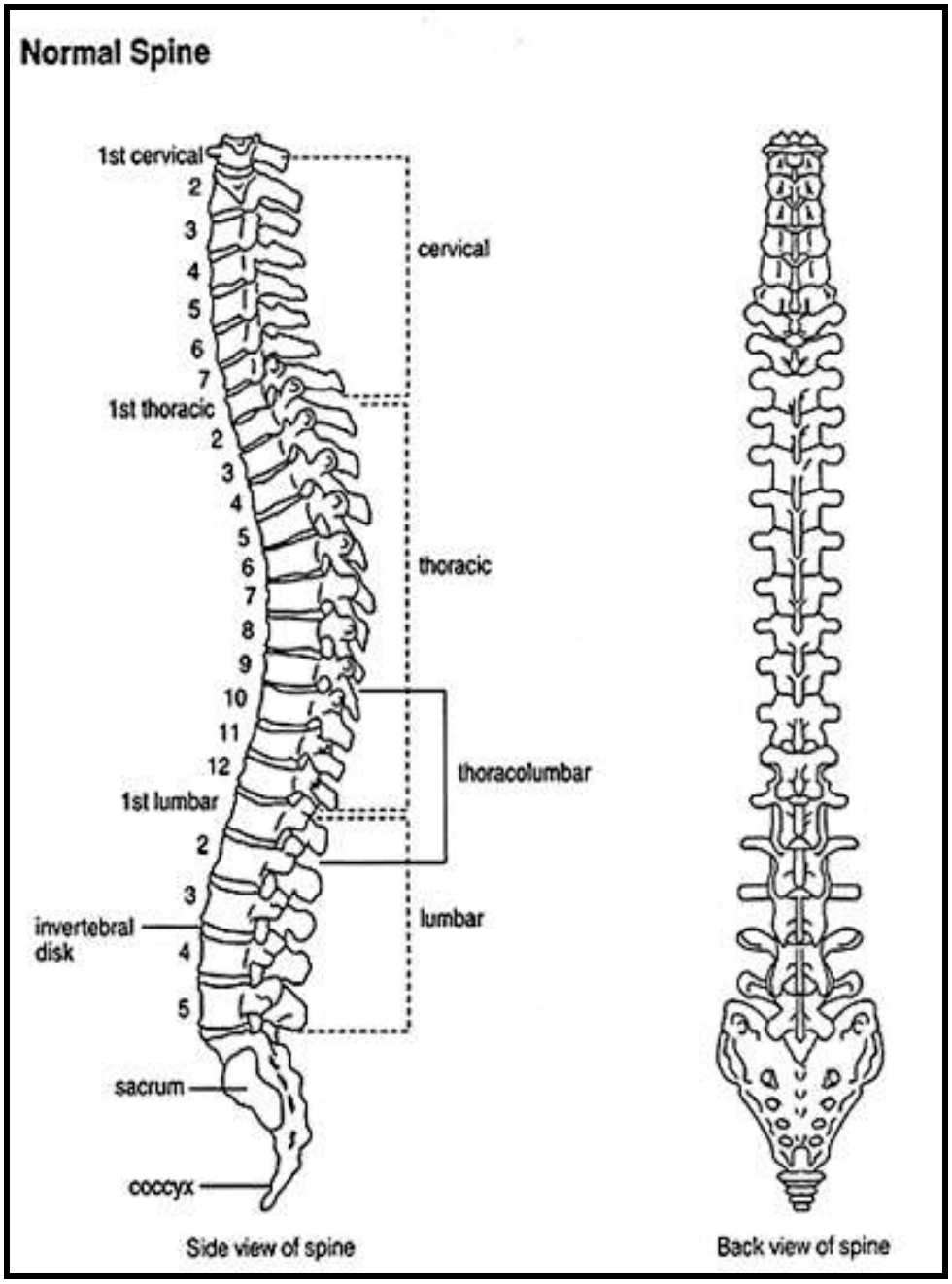

Figure (1): Vertebral column
(Blomberg, 1995)