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Assessment of knowledge and awareness of spinal anesthesia among surgeons.
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Abstract:

Introduction:
Anesthesia is a medical procedure in which the patient is given certain medications that cause the patient to lose sensation and feeling. Anesthesia is either local in a specific area of the body, where the anesthetic drug is given in that area, or general anesthesia that affects the entire body and is performed in major surgeries. In general anesthesia, a drug is given that circulates in the bloodstream, causing the person to become unconscious. This medication can be given into a vein or it can be inhaled whereas regional anesthesia occurs when a local anesthetic is injected into an area of the body around major nerve bundles. Many parts of the body such as the abdomen, eyes, hands and feet can be operated under regional anesthesia while the patient is awake. Anesthesia usually lasts from 12 to 18 hours, and the patient will not feel pain during this period after the operation.

Research Objective
A study of the awareness of surgeons towards regional anesthesia in surgical procedures, and given the prevalence of spinal anesthesia in Syrian hospitals more than other types of regional anesthesia (epidural - nerve block), this study focuses on the awareness of surgeons about spinal anesthesia.

Materials and methods
A cross-sectional study conducted at Al-Mowasat Hospital from 20/5/2023 to 1/7/2023. The sample size was calculated using the survey monkey website, and it was 307 physicians, with a confidence level of 95% and an error rate of 5%. 
Results

- We found a statistically significant relation between the use of spinal anesthesia in order to avoid the risks of general anesthesia for patients with high-risk systemic disease, and the type of surgical specialization of doctors.
- Also, a relationship was found between surgical specialization and the two cases that referred to the use of spinal anesthesia because the doctor is aware of its importance to prevent complications from general anesthesia, and because of the ability to communicate with the patient during surgery (the patient is conscious during surgery).
- We found a statistically significant relationship between the condition that indicates a lack of preference for patient vigilance during the surgical procedure and the doctor's gender, as the arithmetic mean for this case was higher for male doctors compared to females.
- A strong statistically significant relationship was found between each of the two cases, which indicate a preference for general anesthesia due to the length of time to perform the lumbar puncture, which causes loss of time, and because the doctor does not prefer the patient's vigilance during the surgical operation and between the doctor's specialization in surgery.
- A relationship was found between the two cases that indicate the preference for general anesthesia over spinal anesthesia due to the patient's refusal of spinal anesthesia, and in surgeries that require a longer time and the competence of the surgical doctor.

Conclusion:
Spinal/regional anesthesia is considered one of the important procedures currently in hospitals in order to perform many surgeries. The results of our study concluded that there is a medium rate of awareness about the use of this type of anesthesia among surgeons, whether they are specialists or residents in the specialization stage, according to the different surgical specialization. which they practice.

Introduction:
Anesthesia is a medical procedure in which the patient is given certain medications that cause the patient to lose sensation and feeling. Anesthesia is either local in a specific area of the body, where the anesthetic drug is given in that area, or general anesthesia that affects the entire body and is performed in major surgeries. In general anesthesia, a drug is given that circulates in the bloodstream, causing the person to become unconscious. This medication can be given into a vein or it can
be inhaled whereas regional anesthesia occurs when a local anesthetic is injected into an area of the body around major nerve bundles. Many parts of the body such as the abdomen, eyes, hands and feet can be operated under regional anesthesia while the patient is awake. Anesthesia usually lasts from 12 to 18 hours, and the patient will not feel pain during this period after the operation. Spinal anesthesia: the anesthetic substance is injected into the cerebrospinal fluid (CSF) in the subarachnoid space, by entering the space between the lumbar vertebrae S-3-4, the injection causes a sensory and motor blockade in the lower part of the body, and the level of blockade is investigated by pain testing Acupuncture with a thin needle on the skin, and the patient's vital signs are monitored during and after the injection, as spinal anesthesia is often associated with a drop in arterial pressure caused by sympathetic blockade and vasodilatation in the lower extremities, and this requires infusion of intravenous fluids before the blockade. The absorption of the local anesthetic into the nerves is rapid, which makes the spinal anesthesia quick-acting within a few minutes. Spinal anesthesia is often used in operations on the lower extremities, in gynecological operations, cesarean sections, in abdominal operations, or after painful surgeries on the chest, abdomen, or lower extremities. Local anesthetics are chosen according to the speed of anesthesia, the duration of action, the severity of the locomotor blockade, and the toxicity. Local anesthetics with a shorter duration of action and a faster rate include (lidocaine and bupivacaine), while local anesthetics with a longer duration of action include bupivacaine and ropivacaine.

The spread of regional anesthesia is increasing around the world because of its advantages that make it superior to general anesthesia.

The choice of local anesthesia depends on several factors related to:
• Surgeon
• Anesthesiologist
• the patient
• Efficiency of operating rooms
• Knowledge of local anesthesia techniques

The most important complications seen in regional anesthesia:
1. The failure of the blockade
2. Nerve damage
3. Toxicity of local anesthetics
4. Post-anesthesia headaches are more common in spinal and epidural anesthesia
5. Back pain is mild and self-limiting
6. Hypotension and severe bradycardia

Knowledge and awareness of surgeons about regional anesthesia:
Regional anesthesia is becoming increasingly popular around the world due to its many advantages over general anesthesia. The use of regional anesthesia depends
on several factors that depend on the surgeon - the anesthesiologist - the availability of a staff expert in regional anesthesia - the availability of equipped operating rooms - sufficient experience to perform regional anesthesia (the decision depends mainly on the anesthesiologist) and the surgeon's preference may affect the patient's opinion greatly. The presence of an expert team of anesthesiologists in regional anesthesia supports the doctors’ learning of how to perform regional anesthesia, and it is very important that all anesthesiologists perform a certain percentage of regional anesthesia operations during their period of specialization in order to gain the necessary experience and avoid complications.

**Materials and Methods:**

**Study preparation**

A cross sectional study was conducted in Al Muwasat hospital from May 20th to July 1st. After obtaining the approval of the Ethics Council of the Syrian Private University, a research questionnaire was used and distributed to the surgeons after taking the informed consent of all the participating doctors.

**Study tools**

After obtaining the approval of the Ethics Council of the Syrian Private University, a research questionnaire was used and distributed to the surgeons after taking the informed consent of all the participating doctors. The research questionnaire consists of 3 sections:

1. A section for non-nominal personal information of participating physicians
2. A section related to doctors' awareness about the use of spinal anesthesia
3. A section related to doctors' awareness of the disadvantages of spinal anesthesia

**Statistical analysis**

The data were entered into the excel program, then the analytical study was done using the SPSS statistical program, version 25, and a p value less than 0.05 was considered as a statistically significant value.

**Results**

1. **Personal information**
   
The largest number of physicians in the sample were resident physicians, as
they numbered 215 physicians, or 70%, while the specialist physicians formed the rest of the sample, as they numbered 92 physicians, or 30%. Of these doctors, 196 of them were affiliated with the Ministry of Health Hospitals, at a rate of 64%, while the remaining 111 physicians were affiliated with the Higher Education Hospitals, at a rate of 36%.

2. **Benefits of using spinal anesthesia**
   The arithmetic mean of the cases conclude that spinal anesthesia is used to avoid the risks of general anesthesia for patients who suffer from a high-risk systemic disease was 4.43 with a standard deviation of 0.75, while it was 4.10 for the case that says that it is used because the doctor is aware of its importance to prevent complications of general anesthesia with a standard deviation of 0.95.

3. **Disadvantages of using spinal anesthesia and preference for general anesthesia.**
   When asked about the cases that surgeons consider to be disadvantages of using spinal anesthesia, the arithmetic mean for the case that indicated complications during the lumbar puncture procedure was 2.68 with a standard deviation of 1.24, and also for the case that indicated complications that could occur after the surgical procedure was 2.59, with a standard deviation of 1.22.

4. **The relationship between the specialization of surgical doctors and their preference for spinal anesthesia over general anesthesia.**
   When studying the relationship between the benefits of using spinal anesthesia and the surgical specialization of the doctors, we found a statistically significant relationship between each of the cases that indicated the use of spinal anesthesia in order to avoid the risks of general anesthesia for patients with high-risk systemic disease and the type of surgical specialization for doctors.

5. **The relationship between the doctor's age and his preference for spinal anesthesia over the general.**
   A relationship was found between the doctor's age and his choice of spinal anesthesia, based on the anesthesiologist's preferences, and due to its low cost compared to general anesthesia.
6. **The relationship between a doctor's professional/educational degree and his/her preference for using general anesthesia over spinal anesthesia.**
There was a strong significant relationship between each of the two cases who indicated a preference for general anesthesia for fear of muscle blockade caused by spinal anesthesia, or when there was a fear of insufficient muscle relaxation when applying spinal anesthesia, and the doctor's professional grade.

7. **The relationship between the disadvantages of spinal anesthesia and the preference for general anesthesia over it, and the facility to which the doctor is affiliated**
A strong statistically significant relationship was found between the two cases that indicate a preference for general anesthesia because of the patient's fear of feeling pain during surgery, and also because of the fear of muscle blockade with spinal anesthesia and between the hospital to which the doctor belongs, where the arithmetic mean for the first case reached a higher value between doctors of the ministry of health as opposed to the doctors of the ministry of higher education.

**Discussion**

- Hanna et al reported that factors related to anesthesiologists were the main reason for not using regional/spinal anesthesia techniques, at a rate of 40%, while surgeon refusal was the second most common reason, at 34% 18. Patient refusals accounted for 12% in that study. These findings show the importance of surgeons' attitudes regarding spinal/regional anesthesia. The close communication between surgeons and patients and the extended time they spend with patients before operations are all useful for guiding patients' choices in anesthesia methods. However, the patient is not able to interact with the anesthesiologist adequately because the anesthesiologist usually meets the patient the day before surgery.

- An important finding in our study is that the surgeons participating in the survey chose local anesthesia because of the higher risk of general anesthesia compared to rheumatoid arthritis in high-risk patients and to protect against potential complications from general anesthesia. In other words, it can be said that regional/spinal anesthesia is not chosen because of
its advantages but rather as an alternative to general anesthesia in cases where the risk of general anesthesia is high. Dugli et al. investigated obstetricians' preferences regarding regional anesthesia during caesarean sections.

- Contrary to our findings, they reported that 80% of obstetricians preferred local anesthesia for these procedures. The main reasons for this preference were reported to be safety and the lower number of complications compared to general anesthesia, as noted by obstetricians.
- In this study, we noticed that the reasons for choosing or not choosing regional/spinal anesthesia changed according to the surgical field. For example, “Postoperative satisfaction was found to be important for the choice of regional/spinal anesthesia among orthopedic and general surgeons, while “complications that may occur postoperatively” appears to be the most common response in opposition to this type. Of anesthesia among surgeons in obstetrics and gynecology.

In a survey conducted by Oldman et al to explore orthopedic surgeons' attitudes and knowledge regarding regional anesthesia, forty percent of orthopedic surgeons directed their patients to choose regional anesthesia.

- In another study, 75% of orthopedic surgeons reported that they consider local anesthesia to be a safe procedure and therefore prefer this method of anesthesia, as “time savings by performing regional/spinal anesthesia in another room” and “short recovery after surgery” were found as reasons important in our study among surgeons who received their education in university hospitals, and also, despite the use of local anesthesia, even in the operating room, this did not lengthen the times of using the operating room compared to general anesthesia.
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**Conclusions**

Spinal/regional anesthesia is considered one of the important procedures currently
in hospitals in order to perform many surgeries. The results of our study concluded that there is a medium rate of awareness about the use of this type of anesthesia among surgeons, whether they are specialists or residents in the specialization stage, according to the different surgical specialization, which they practice.

**Ethics approval and consent to participate**

This study was approved by the Institutional Review Board (IRB) at Syrian Private University. Written consent was obtained from all participants. Participation in the study was voluntary and participants were assured that there would be no victimization of anyone who did not want to participate or who decided to withdraw after giving consent.

**Consent for publication:**

Not applicable.

**Availability of data and materials:**

All data related to this paper’s conclusion are available and stored by the authors. All data are available from the corresponding author on reasonable request.

**Competing interests:**

None of the authors have any competing interests. The authors alone are responsible for the content and writing of the article. No conflict of interest is declared.

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