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Research Article

Saudi Board-Western Region-Anesthesia Residents' Self-Reported Confidence toward Regional Anesthesia in a Joint Program: Cross Sectional Survey

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Abstract

Background: Regional anesthesia recently took the advantage over general anesthesia in a way that meets patients' satisfactions and decreases the overall complications of general anesthesia. However, there is no sufficient data to evaluate the level of confidence in the practice of regional anesthesia in Saudi Arabia, so the progress of the skills required to perform these techniques cannot be determined in the near future among the anesthesia residents in Saudi Arabia. In this survey, we assessed the level of confidence in regional anesthesia performance among anesthesia residents in the Saudi residency training program in the western region.

Methods: A cross sectional study was conducted among all anesthesia residents, whom under the anesthesia residency training program in the Western Region of Kingdom of Saudi Arabia. Data was collected using a questionnaire in which several items were adopted from the work Smith MP., et al [1]. The questionnaire was reviewed and approved by the ethical committee of KAUH and was filled anonymously.

Results: Out of 104 of the program residents, 87 were reached, and 45 responded to the survey, 70% of them were junior residents and 30% were seniors. The senior residents reported a higher level of confidence than junior residents in performing Epidural-lumber, epidural-thoracic, brachial-inter-scalene, sciatic, intravenous regional, femoral and ankle blocks (P = 0.0001, P = 0.0001, P = 0.014, P = 0.001, P = 0.0001, P = 0.005, P = 0.0001, respectively). Meanwhile, there's insignificant difference in the level of confidence between the senior and junior residents in performing spinal, and retro-bulbar blocks (P = 0.239 and P = 0.058, respectively) (Table 3).

Conclusion: The Rate of exposure to spinal and lumbar epidural blocks is high at both junior and senior residents with high level of confidence, whereas exposure to other regional techniques was low with residents reported being unconfident in preforming them, which increase the need for more training and workshops in different types of regional anesthesia. The joint program gives more opportunities and assist in gaining confidence at the junior level, while there is no effect at the senior level.

Keywords: *Region-Anesthesia Residents; Joint Program; Lumbar Epidural*

Introduction

Regional anesthesia recently took the advantage over general anesthesia in a way that meets patients' satisfactions and decreases the overall complications of general anesthesia [1]. Therefore, the rate of using regional anesthesia during residency training programs has been increasing throughout the years [2]. In the American board of anesthesia, there is no sufficient information about the confidence

level of using regional anesthesia techniques [3]. Such information is needed to improve the overall quality and the outcome of regional anesthesia. In Saudi Arabia, the anesthesia residency training program is a 5-years structured training. Residents in the first 3 years (R1-R3) are considered juniors. Whereas, residents in the last 2 years (R4 and R5) are considered seniors. The Saudi program is a joint program where residents are rotating in different centers certified by the Saudi commission for Health Specialties (SCFHS) in a certain region throughout their training years, it gives the trainees more access to resources, deal with different consultants, and greater exposure to different types of procedures. The program offers 3 - 5 months training in regional anesthesia, including: spinal anesthesia, epidural anesthesia/analgesia, and nerve blocks [4]. However, there is no sufficient data to evaluate the level of confidence in the practice of regional anesthesia in Saudi Arabia, so the progress of the skills required to perform these techniques cannot be determined in the near future among the anesthesia residents in Saudi Arabia [5]. In this survey, we assessed the level of confidence in regional anesthesia performance among anesthesia residents in the Saudi residency training program in the western region.

Methodology

A cross sectional study was conducted among all anesthesia residents, whom under the anesthesia residency training program in the Western Region of Kingdom of Saudi Arabia. The primary study endpoint is the level of confidence in performing regional anesthesia. The secondary endpoints are the relationship between anesthesia joint program and the confidence level in performing regional anesthesia, and the average number of regional anesthesia procedures performed by junior and senior residents. Data was collected using a questionnaire in which several items were adopted from the work Smith MP., *et al* [1]. The questionnaire was reviewed and approved by the ethical committee of KAUH and was filled anonymously. Anesthesia residents were approached on the academic day where the questionnaire was distributed and collected manually. To approach residents who were absent, the questionnaire was sent electronically to the residents by email. The Data was then entered to SPSS and analysis was made by using SPSS version 20. All data are reported as number (percent), mean +/- standard deviation (minimum - maximum) and or median with interquartile range (IQR) as appropriate. Groups were compared on categorical variables with the Chi square test and on ordinal variables with the Jonckheere-Terpstra test for ordered alternatives. The differences were considered significant at $P < 0.05$.

Results

Out of 104 of the program residents, 87 were reached, and 45 responded to the survey, 70% of them were junior residents and 30% were seniors. However, the sample is representative to the populations as the total of senior residents represent 27% and the junior represent 73% of the program. The participants' demographics are shown in table 1. The estimated cumulative median number of blocks performed at each level of training is shown in table 2. Even though the residents' exposure to different regional anesthetic techniques is variable, there's a consistent increasing in the exposure to different regional blocks techniques as the level of residents increase in spinal, epidural, lumber, Intravenous regional, femoral, ankle, epidural-thoracic, and Brachial-inter scalene with ($P = 0.006$, $P = 0.001$, $P = 0.007$, $P = 0.001$, $P = 0.002$, $P = 0.0001$, $P = 0.005$ and $P = 0.001$, respectively with Jonckheere-Terpstra test). Senior residents reported a high cumulative training exposure to spinal (median, 100; IQR, 100 - 400) and lumbar epidural blocks (median, 50; IQR, 40 - 200), whereas exposure to all other regional techniques is considerably lower with the median being of ten or less for each epidural-thoracic (median, 10; IQR, 4 - 30), ankle (median, 10; IQR, 1 - 30), intravenous regional (median, 7.50; IQR, 2.00 - 62.50), interscalene, femoral (median, 5; IQR, 4 - 100), sciatic (median, 5; IQR, 1 - 50), brachial - inter- scalene (median, 2; IQR, 1 - 50). The exposure to retrobulbar block is the lowest with a median of 0 for each resident in all senior levels. Meanwhile, the junior residents reported a high cumulative exposure to spinal (median, 80; IQR, 30 - 100) and lumbar epidural blocks (median, 20; IQR, 4 - 50), whereas exposure to the other regional techniques is considerably lower, with the median of performing is 2 or less for ankle (median, 2; IQR, 0 - 10), intravenous regional (median, 2; IQR, 0 - 5), femoral (median, 2; IQR, 0 - 7), epidural-thoracic (median, 1; IQR, 0 - 4), sciatic (median, 1; IQR, 0 - 7). The exposure to retrobulbar, and brachial inter-scalene is very low with a median of 0 for each resident in all junior levels. The level of confidence is increasing as the level

of the training increase. The senior residents reported a higher level of confidence than junior residents in performing Epidural-lumber, epidural-thoracic, brachial-inter-scalene, sciatic, intravenous regional, femoral and ankle blocks (P = 0.0001, P = 0.0001, P = 0.014, P = 0.001, P = 0.0001, P = 0.005, P = 0.0001, respectively). Meanwhile, there's insignificant difference in the level of confidence between the senior and junior residents in performing spinal, and retro - bulbar blocks (P = 0.239, and P = 0.058, respectively) (Table 3). The junior residents need further training and workshops than senior residents for performing epidural-lumbar, epidural- thoracic, intravenous regional, femoral and ankle (P = 0.016, P = 0.034, P = 0.045, P = 0.023 and P = 0.005, respectively). While there's insignificant difference in the needs for more raining and workshops between the junior and senior residents for performing spinal, brachial-inter-scalene, retro-bulbar and sciatic blocks (P = 0.059, P = 0.393, P = 0.621, P = 0.330) (Table 4).

Characteristics	Total (n = 45, 100%)	Junior residents (R1-R3) (n = 34, 75.56%)	Senior residents (R4-R5) (n = 11, 24.44%)
Age (years)	28.43 ± 2.33 (25.00 - 35.00)	27.89 ± 2.06 (25.00 - 33.00)	30.11 ± 2.42 (28.00 - 35.00)
Gender			
Male	30 (62.20%)	22 (73.44%)	8 (26.67%)
Female	10 (26.70%)	8 (80.00%)	2 (20.00%)
Missing	5 (11.10%)		

Table 1: *Demographic characters of participants (n = 45).*
Data are expressed as mean +/- standard deviation (minimum - maximum) or number (%) as appropriate.

Block type	Total (n = 45, 100%)	Junior residents (R1-R3) (n = 34, 75.56%)	Senior residents (R4-R5) (n = 11, 24.44%)	Significance
Spinal	80 (30.00 - 100.00)	55 (28.25 - 100)	100 (100.00 - 400.00)	0.006
Epidural-Lumbar	20 (4.00 - 50.00)	10 (1.75 - 22.50)	50 (40.00 - 200.00)	0.0001
Epidural-Thoracic	1 (0.00 - 4.00)	0.5 (0.00 - 2.00)	10 (4.00 - 30.00)	0.0001
Brachial-Inter-Scalene	0 (0.00 - 2.00)	0 (0.00 - 1.25)	2 (1.00 - 50.00)	0.001
Retro-bulbar	0 (0.00 - 0.00)	0 (0.00 - 0.00)	0 (0.00 - 15.00)	0.223
Sciatic	1 (0.00 - 7.00)	0 (0.00 -2.75)	5 (1.00 - 50.00)	0.005
Intravenous Regional	2 (0.00 - 5.00)	1 (0.00 - 3.25)	7.50 (2.00 - 62.50)	0.007
Femoral	2 (0.00 - 7.00)	1 (0.00- 4.00)	5 (4.00 - 100.00)	0.001
Ankle	2 (0.00 - 10.00)	2 (0.00- 5.00)	10 (1.00 - 30.00)	0.002

Table 2: *Types and number of regional blocks performed according to level of residency training.*
Data are expressed as Median (IQR); IQR = interquartile (25th and 75th percentile) range. Significance according to residency level was made using Mann-Whitney U test.

A 5-point Likert scale was used to assess residents' agreement level to certain statements. The levels of agreement among junior residents on training in other hospitals as part of the joint program requirements had provided them with more opportunities to perform different regional anesthesia procedures were mostly strongly agree, agree, neutral, disagree, strongly disagree (47.10%, 32.40%, 8.80%, 8.80% and lastly 2.90%) respectively, with significant difference between them (P = 0.0001). Meanwhile there is insignificant difference in the levels of agreement among senior residents (P = 0.107). The levels of agreement among junior residents on wither performing

					Training levels								
Regional blocks	Total (n = 45, 100%)				Junior residents (n = 34, 75.56%)				Senior residents (n = 11, 24.44%)				
	Very Confident	Some-what Confident	Not Confi-dent	Mean	Very Confident	Some what Confident	Not Confident	Mean	Very Confident	Somewhat Confident	Not Confident	Mean	Significance
Spinal	41 (91.10%)	3 (6.70%)	1 (2.20%)	1.11	30 (88.20%)	3 (8.80%)	1 (9.20%)	1.15	11 (100.00%)	-	-	1	0.239
Epidural-Lumbar	23 (51.10%)	13 (28.90%)	9 (20.00%)	1.69	12 (35.30%)	13 (38.20%)	9 (26.50%)	1.91	11 (100.00%)	-	-	1	0.0001
Epidural-Thoracic	8 (17.80%)	13 (28.90%)	24 (53.30%)	2.36	2 (5.90%)	9 (26.50%)	23 (67.60%)	2.62	6(54.50%)	4 (36.40%)	1 (9.10%)	1.54	0.0001
Brachial-Inter-Scalene	1 (2.20%)	17 (37.80%)	24 (53.30%)	2.55	-	10 (32.30%)	21 (67.70%)	2.68	1 (9.10%)	7 (63.60%)	3 (27.30%)	2.18	0.014
Retro-bulbar	-	5 (11.10%)	39 (86.70%)	2.89	-	2 (6.10%)	31 (93.90%)	2.94	-	3 (27.30%)	8 (72.70%)	2.73	0.058
Sciatic	7 (15.60%)	15 (33.30%)	21 (46.70%)	2.33	4 (12.50%)	7 (21.90%)	21 (65.60%)	2.53	3 (27.30%)	8 (72.70%)	-	1.73	0.001
Intra-venous Regional	16 (35.60%)	9 (20.00%)	18 (40.00%)	2.05	6 (18.80%)	8 (25.00%)	18 (56.20%)	2.38	10 (90.90%)	1 (9.10%)	-	1.09	0.0001
Femoral	13 (28.90%)	15 (33.30%)	15 (33.30%)	2.05	7 (21.90%)	10 (31.20%)	15 (46.90%)	2.25	6 (54.50%)	5 (45.50%)	-	1.45	0.005
Ankle	15 (33.30%)	16 (35.60%)	14 (31.10%)	1.98	5 (14.70%)	15 (44.10%)	14 (41.20%)	2.26	10 (90.90%)	1 (9.10%)	-	1.09	0.0001

Table 3: *Level of confidence in performing different anesthetic procedures.*

*Data are expressed as percentage or mean as appropriate. Significance between junior and senior residents was made using Jonckheere-Terpstra test for increased median confidence with level of training. * Confidence coding: Very = 1; somewhat = 2; Not = 3.*

regional anesthesia procedures in different hospital environments has raised their confidence level in performing these procedures were mostly strongly agree, agree, neutral, and strongly disagree (58.80%, 14.70%, 14.70% and lastly 11.80%) with significant difference between them (P = 0.0001). Meanwhile there were insignificant difference in the levels of agreement among senior residents (P = 0.107) (Table 5).

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Significance
Training in other hospitals as part of the joint program requirements provided me with more opportunities to perform different regional anesthesia procedures.						
Total (n = 45, 100%)	22 (48.90%)	14 (31.10%)	4 (8.90%)	3 (6.70%)	2 (4.40%)	0.0001
Junior residents (n = 34, 75.56%)	16 (47.10%)	11 (32.40%)	3 (8.80%)	3 (8.80%)	1 (2.90%)	0.0001
Senior residents (n = 11, 24.44%)	6 (54.50%)	3 (27.30%)	1 (9.10%)	-	1 (9.10%)	0.107
Performing regional anesthesia procedures in different hospital environments has raised my confidence level in performing these procedures.						
Total (n = 45, 100%)	26 (57.80%)	8 (17.80%)	6 (13.30%)	-	5 (11.10%)	0.0001
Junior residents (n = 34, 75.56%)	20 (58.80%)	5 (14.70%)	5 (14.70%)	-	4 (11.80%)	0.0001
Senior residents (n = 11, 24.44%)	6 (54.50%)	3 (27.30%)	1 (9.10%)	-	1 (9.10%)	0.107

Table 5: *Residents' level of agreement to statements regarding anesthesia joint program.*

Data are expressed as number (%). Significance was made using Chi-Square test.

Discussion

Since the beginning of the joint anesthesia residency program in Saudi Arabia, this is the first survey to assess their exposure, practice and their confidence level in performing regional anesthesia. This study found a consistent pattern of increasing exposure to regional block techniques along the residency level of training. Senior residents were more exposed to most of the regional block techniques in comparison with junior residents. However, the highest regional block techniques used among both senior and junior residents were spinal (p value = 0.006) and lumbar epidural blocks (p value = 0.0001), whereas exposure to all other regional techniques was considerably lower, with the median performed being ten or less for each. Finally, Exposure to retrobulbar blocks was very low, with a median 0 per resident at training level. These findings are similar to the findings of the American Anesthesia Residency Training Programs Survey [1].

Overall, around half of the junior and most of the senior residents reported being very confident in performing spinal block and epidural-lumber blocks. Residents' confidence level was much lower in sciatic block and intravenous regional block, while seniors were slightly more confident. This is also consistent with the American Anesthesia Residency Training Programs Survey, as they reported that more than half of their senior residents reported being not confident in performing types of regional anesthesia other than spinal block and epidural-lumber blocks [1].

The results of our study illustrate that most of the residents are receiving sufficient exposure to the spinal block and epidural-lumber blocks during their residency training and they expressed no requirement for further training in both techniques. However, most of the residents are still having inadequate exposure and experience to be confidant in performing most of the other techniques of peripheral nerve blocks. This rise the call for conducting more CME accredited courses and workshops and more importantly, further in cooperation of these regional anesthesia techniques in the residency program curriculum.

The joint program provides more exposure to different types of regional anesthesia and assess in raising the confidence at the junior level (P = 0.0001). Meanwhile there's not much effect at the senior level (P = 0.107).

A 5 point Likert scale was used to assess residents' agreement level to certain statements. The levels of agreement among junior residents on training in other hospitals as part of the joint program requirements had provided them with more opportunities to perform different regional anesthesia procedures were mostly strongly agree, agree, neutral, disagree, strongly disagree (47.10%, 32.40%, 8.80%, 8.80% and lastly 2.90%)respectively, with significant difference between them (P = 0.0001). Meanwhile there is insignificant difference in the levels of agreement among senior residents (P = 0.107). The levels of agreement among junior residents on wither performing regional anesthesia procedures in different hospital environments has raised their confidence level in performing these procedures were mostly strongly agree, agree, neutral, and strongly disagree (58.80%, 14.70%, 14.70% and lastly 11.80%) with significant difference between them (P = 0.0001). Meanwhile there were insignificant difference in the levels of agreement among senior residents (P = 0.107) (Table 5).

The research team hope the results of this study to be considered by the decision makers in the Saudi Commission for Health Specialties. This study being the first in its nature, is believed to be a good chance to evaluate the residents' confidence in performing regional anesthesia. A nationwide study with a larger sample size should be done to investigate residents' exposure to regional anesthesia across the country.

Conclusion

The Rate of exposure to spinal and lumbar epidural blocks is high at both junior and senior residents with high level of confidence, whereas exposure to other regional techniques was low with residents reported being unconfident in preforming them, which increase the need for more training and workshops in different types of regional anesthesia. The joint program gives more opportunities and assist in gaining confidence at the junior level, while there is no effect at the senior level.

Bibliography

1. Cozowicz C., *et al*. "Trends in the use of regional anesthesia: neuraxial and peripheral nerve blocks". *Regional Anesthesia and Pain Medicine* 41.1 (2016): 43-49.

2. Kopacz DJ and Bridenbaugh DL. "Are anesthesia residency programs failing regional anesthesia? The past, present, and future". *Regional Anesthesia and Pain Medicine* 18.2 (1993): 84-87.

3. Smith MP., *et al*. "A survey of exposure to regional anesthesia techniques in American anesthesia residency training programs". *Regional Anesthesia and Pain Medicine* 24.1 (1999): 11-16.

4. Saudi commission for health specialties, S.C.F.H.S. Anesthesia and Care (2015).

5. Al Harbi M., *et al*. "A survey of the practice of regional anesthesia in. Saudi Arabia". *Saudi Journal of Anaesthesia* 7.4 (2013): 367-370.

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