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NECK AND UPPER LIMB PAIN AMONG GYNECOLOGISTS WORKING AT MENOUFIA GOVERNORATE IN EGYPT

By

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Abstract

Introduction: Little attention was paid to explore the prevalence of neck and upper limb pain among gynecologists particularly those who perform laparoscopic procedures. **Aim of work:** To assess the frequency of pain in the neck and upper limbs among gynecologists working at Menoufia governorate in Egypt and to explore common risk factors. **Materials and methods:** A pre-designed questionnaire was sent to 642 gynecologists who worked at Menoufia governorate in Egypt; 583 were returned (90.8%). Descriptive and analytical statistical analyses were performed to assess the frequency of pain in neck and upper limb and to detect their risk factors. **Results:** Among 583 gynecologists, 293 (50.3%) were male and 290 (49.7%) were females; age ranged from 27 to 60 years old, out of them 315 (54.03%) experienced neck and/or upper limb pain. Most of the affected participants experience pain 1-2 times/week (80.6%), received medical treatment for pain (92.7%), applied for sick leave 1-2 times/month (77.1%) and taught that attaining certain posture while operating is the main cause of their pain (73.3%). Age above 45 years (odd's ratio 1.45), clinical practice over 15 years, laparoscopic procedures (odd's ratio 1.88), more than ten operations per week (odd's ratio 2.78) and operations took more than one hour (odd's ratio 2.10) increase the risk for developing neck and/or upper limb pain. **Conclusion:** This study revealed that neck and/or upper limb pain is common among gynecologic laparoscopists. Adoption of ergonomic posture and decreasing working hours when performing laparoscopic procedures may help to minimize the risk of a work-related pain. Future research should explore the implementation of ergonomic guidelines and correlation with subsequent improvement of outcome.

Key words: Neck and upper limb pain, Gynecologists, Occupational pain and laparoscopy.

Introduction

Many occupational diseases have been reported among gynecologists as thermal burns or shocks during electrosurgical procedures (Tucker and Ferguson, 1991), psychological stress (ACOG, 1992), face shield contamination during vaginal and cesarean deliveries (Kouri and Ernest, 1993), backache (Dolan and Martin, 2001), needle sticks (Ayas et al, 2006) and orthopedic injuries (Yoong et al, 2008).

Laparoscopic procedures necessitate sustained special posture during operating which may lead to dangerous complications as cervical disc (Wu et al, 1999).

Most of the previous studies discuss musculoskeletal complaints mainly fatigue and back pain among gynecologists and surgeons without special emphasis or review to their occupational exposure (Wu et al, 1999, Dolan and Martin, 2001 and Hackmon et al, 2006).

Little attention was paid to explore the prevalence of neck and upper limb pain among gynecologists particularly those who perform laparoscopic procedures.

Aim of work

The aim of this study was to assess the frequency of pain in the neck and/or upper limbs among gynecologists working at Menoufia governorate in Egypt and to explore the common risk factors.

Materials and methods

Study design: It is a cross-sectional study.

Place and duration of study: This study was conducted in the Department of Public Health and Community Medicine, Faculty of Medicine, Menoufia University, Menoufia, Egypt during the period from the beginning of December 2016 to the end of March 2017.

Study Sample: Gynecologists working at Menoufia governorate.

Study methods: A questionnaire was pre-designed to be easily read and completed in short time (about 5-8 minutes). This questionnaire was distributed to all gynecologists working at Menoufia central hospitals

as well as Teaching and University Hospital members. The questionnaire forms were collected immediately after completion by the corresponding gynecologists. Out of 642 forms, 583 were completed and returned; response rate was (90.8%). The questionnaire entails general questions followed by specific inquires about neck and upper limb pain with special emphasis on cause, duration, treatment and impact on work status.

Consent

An informed consent was taken from all responders.

Ethical approval

The Ethical committee at Menoufia Faculty of Medicine approved the study protocol.

Data management

All data were statistically analyzed by computer using the SPSS v.22. Descriptive data were presented as number and percent for qualitative variables. Chi square test was used for qualitative variables. Spearman correlation was used to test correlation between quantitative variable and ordinal qualitative variables, with a significance level of p value less than 0.05.

Results

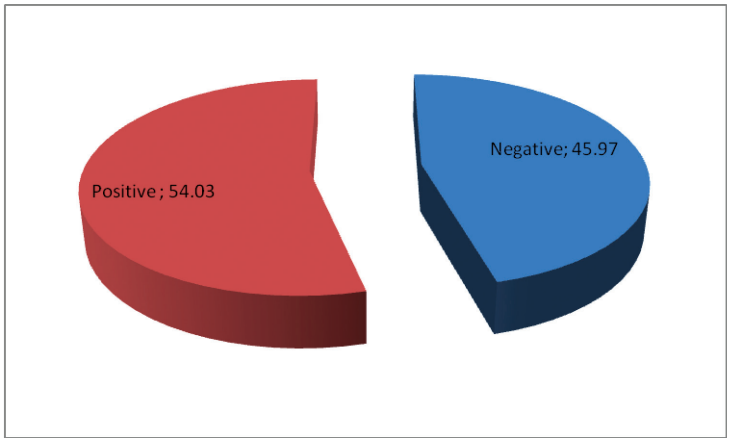

Fig (1) Prevalence of pain among Menoufia gynecologists.

Figure 1 showed that the prevalence of neck and / or upper limb pain among Menoufia gynecologists was 54.03% (315 cases out of 583 participants).

Table (1): Pain characteristics among gynecologists.

Pain characteristics	No. (315)	%
Type of pain :		
Neck pain	112	35.5
Upper limb pain	156	49.5
Both	47	15
Frequency of pain:		
Daily	38	12.1
1-2 times/week	254	80.6
1-2 times/month	15	4.7
Rare	8	2.6
Presumed cause of pain:		
Operative time	66	20.9
Posture	231	73.3
Type of surgery	18	5.8
Received therapy for pain:		
Analgesics (local or systemic)	292	92.7
Physiotherapy	23	7.3
Surgery	0	0
Sick leave secondary to pain:		
1-2 times/week	54	17.1
1-2 times/month	243	77.1
Rare	18	5.8

Table1 showed that 80.6% of the studied group experience pain 1-2 times/ week, 92.7% received medical treatment for pain , 77.1% applied for sick leave 1-2 times/month and 73.3% thought that attaining certain posture while operating is the main cause of pain .

Table (2): Risk factors for pain among affected gynecologists.

Risk factors	Positive cases (315)	Negative cases (268)	Chi square test	p value	Odd›s ratio (CI at 95%)
Age: <45 years > 45 years	99 (31.4%) 216 (68.6%)	107 (39.9%) 161 (60.1%)	4.58	**<0.05***	1.45 (1.03- 2.04)
Gender: Male Female	162 (51.4%) 153 (48.6%)	131 (48.9%) 137 (51.1%)	0.38	>0.05	========
Clinical practice: <15 years >15 years	118 (37.5%) 197 (62.5%)	138 (51.5%) 130 (48.5%)	11.58	**<0.001****	1.77 (1.27- 2.47)
Type of surgery: Laparoscopy Open surgery	224 (71.1%) 91 (28.9%)	152 (56.7%) 116 (43.3%)	13.10	**<0.001****	1.88 (1.33- 2.65)
Number of operations/week: <10 >10	113 (35.9%) 202 (64.1%)	163 (60.8%) 105 (39.2%)	36.15	**<0.001****	2.78 (1.98- 3.88)
Duration of single operation: <one hour >one hour	82 (26.01%) 233 (73.99%)	114 (42.5%) 154 (57.5%)	17.68	**<0.001****	2.10 (1.48- 2.98)

*: statistically significant **: Highly statistically significant

Table (2) showed that, age above 45 years (odd's ratio 1.45), clinical practice over 15 years, laparoscopic procedures (odd's ratio 1.88), more than ten operations per week (odd's ratio 2.78) and operations took more than one hour (odd's ratio 2.10) increase the risk for developing neck and/or upper limb pain. Sex of the gynecologist has no significant effect on experiencing neck and /or upper limb pain.

Table (3): Correlation of pain among affected gynecologists and some risk factors.

Risk factors	**Spearman correlation** (r)	**p value**
Pain and age	0.452	**<0.05 ***
Pain and duration of operation	0.562	**<0.001***
Pain and duration of clinical practice	0.493	**<0.05 ***
Pain and number of operations /week	0.587	**<0.001****

*: statistically significant **: Highly statistically significant

Table 3 showed that there was significant positive correlation between pain among affected gynecologists and age, operation duration, duration of clinical practice, and number of operations /week.

Discussion

In this study, neck and/or upper limb pain affects 54.03% of the studied group of gynecologists (Figure 1). Pain tends to affect those performing laparoscopic rather than open procedures particularly with more than ten operations per week with lengthy operations longer than one hour (Table 2). Pain mandates sick leave and seeking medical advice when recurs more than two times per week (Table 1).

Positive association between musculoskeletal disorders and increased work hours per shift and increased years of employment was reported by Trinkoff et al., 2006 who conducted a longitudinal, three wave survey on 2,617 registered nurses and found that extended work schedules (long hours, on-call, mandatory overtime, working on days off) were associated with increased risk of neck, back and shoulder pain among nurses.

Also, Esser et al., 2007, reported that pain and stiffness in the neck, shoulders, and lower back occurred on average at age 35.4 years and symptoms get worse during performing office-based surgery.

More recently, Mehrdad et al., 2012, conducted a self-administered questionnaire that was provided to 405 physicians in four teaching hospitals. Musculoskeletal disorders with neck and knee pain were associated with increased work hours per shift and increased years of employment.

Surgeons who perform laparoscopic procedures have a significant amount of neck pain irrespective of age as proved in previous studies (Wu et al, 1999 and Lee et al, 2007).

The laparoscopic technique involves special ergonomic posture, such as static, tiring-work positions and repetitive movements of hands. More than 70% of the laparoscopists have musculoskeletal disorders in their clinical practice once a week or more often (Stomberg et al, 2010).

About 86% of urologic laparoscopists report musculoskeletal disorders with most common areas for chronic complaints were neck, back, and shoulders. One third of the urologists considered their knowledge about ergonomics minimal, and 8% stated that they had no knowledge about these topics (Tjiam et al, 2014). The non-optimal environment in the operating room, absence of ergonomic education, and staff members being unaware of existing ergonomic guidelines are other contributing factors for neck and shoulder pain (Wauben et al, 2006).

Static positioning of the surgeon and stationary monitors set the surgeon up for physical and mental stress leading to neck, shoulder, and even wrist pain (Vereczkei et al, 2004).

Modifying footwear, flooring, table height, operating position, lighting, and surgical instruments may improve the ergonomics of surgery (Esser et al., 2007).

A previous review found that an important ergonomic factor during laparoscopic surgery is the monitor position. To increase the surgeons' comfort, the monitor should be straight in front of each person in the horizontal plain. To avoid neck extension, the monitor should be positioned lower than, in the sagittal plain (van Det etal, 2009).

A further improvement could be the use of a robot-assisted surgical system reducing both cognitive and physical

stress when performing laparoscopic surgery (van der Schatte et al, 2009).

The high response rate in completion and return of the questionnaire in this study makes its findings more comprehensive and realistic.

The self-reporting nature of the study and absence of information on participants' earlier possible diagnosis of musculoskeletal disorders were the main limitations of this study.

Future research should explore the implementation of ergonomic guidelines and correlation with subsequent improvement of outcome.

Conclusion

Neck and/or upper limb pain is prevalent among gynecologists performing laparoscopic procedures. Adoption of ergonomic posture when performing laparoscopic procedures may help to minimize the risk of a work-related pain.

Conflicts of interest

None declared.

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