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Research Article

PULMONARY CHANGES DURING UPPER GASTROINTESTINAL ENDOSCOPY

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Abstract:

Objective: To evaluate the pulmonary changes in patients underwent gastrointestinal endoscopy at tertiary care hospital

Patients and Methods: The patients underwent upper GI endoscopy were explored, enrolled and recruited in this six months cross sectional study after taking informed consent. The respiratory system examination was performed while before, during and after the SPO₂ monitoring was done simultaneously by pulse oximetry. The data saved on pre-designed proforma and analyzed in SPSS 16 while the mean \pm SD, frequencies and percentages was calculated.

Results: The mean age \pm SD for whole population was 53.98 \pm 7.96. Of fifty the de-saturation was identified in 22 patients of which mild oxygen desaturation (SPO₂ < 95%) in 8 (36.3%) of the patients, moderate oxygen desaturation (SPO₂ 90- 95%) in 9 (40.9%) and severe desaturation (SPO₂ <90%) in 5 (22.7%) patients. The mean \pm SD for SPO₂ % in male and female population before the procedure was 98.62 \pm 1.21 and 98.85 \pm 1.56 while during the procedure it was 93.42 \pm 1.85 and 93.81 \pm 2.95 whereas after the procedure was 96.98 \pm 2.52 and 98.21 \pm 1.21 respectively.

Conclusion: The present revealed transient hypoxic events during endoscopy and did not lead to significant pathology. Thus in elderly subjects and the individuals with co-morbid conditions or in the patients with pre existing lung diseases oxygen saturation should be monitored during the endoscopic procedure.

Keywords: Endoscopy, Peripheral capillary oxygen saturation and Upper gastrointestinal endoscopy.

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INTRODUCTION:

Upper gastrointestinal (GI) endoscopy reveals examination of upper GI strictures through flexible fibre-optic endoscope and used to explore variety of gastrointestinal complaints as vomiting, abdominal pain, dysphagia and dyspepsia etc and various disorders as malabsorption syndromes and malignancy and also have therapeutic benefits as well [1-4].

Although it is invasive procedure but have fine safety profile in elderly patients with co-morbidities but also have some complications as well specially during and after the procedure [5]. Thus the knowledge of common complications and events and their expected frequencies can reduce the burden and risk of complications while the physician and health care provider should be aware about occurrence of any life threatening events and complications [6-9]. Thus early evaluation and prompt management may minimize morbidity and mortality and complications namely bleeding, cardiopulmonary problems, infection and perforations [10].

Therefore this study was conducted to evaluate the alteration in oxygen saturation (SPO₂) during upper GI endoscopy and its effect on respiratory system as far as oxygen desaturation is concerned.

PATIENTS AND METHODS:

The patients underwent upper GI endoscopy were explored, enrolled and recruited in this six months

cross sectional study after taking informed consent. The respiratory system examination was performed while before, during and after the procedure the SPO₂ monitoring was done simultaneously by pulse oximetry as it is a reliable non invasive method in evaluating the arterial oxygen saturation and also use for monitoring the patient during respiratory embarrassment. The inclusion criteria of the study were all the individuals of ≥ 12 years, either gender underwent upper gastrointestinal endoscopy at tertiary care hospital while the exclusion criteria were subjects with cardiogenic shock, heart failure, arrhythmias, respiratory failure, acute myocardial infarction and the individuals with $\leq 90\%$ oxygen saturation at baseline and required or already on oxygen therapy before the procedure. SPSS 16 was used to analyze and interpret the data.

RESULTS:

During six months study period, total fifty patients underwent for endoscopy were studied. The mean age \pm SD for whole population was 53.98 ± 7.96 . Of fifty the de-saturation was identified in 22 patients of which mild oxygen desaturation (SPO₂ < 95%) in 8 (36.3%) of the patients, moderate oxygen desaturation (SPO₂ 90- 95%) in 9 (40.9%) and severe desaturation (SPO₂ <90%) in 5 (22.7%) patients. The results of the study are presented in Table 1-4.

Table 1: Distribution of Age

AGE GROUP (years)	N=50	PERCENTAGE (%)
12-19	04	8
20-29	07	14
30-39	10	20
40-49	11	22
50-59	09	18
60-69	05	10
70+	04	08

Table 2: The Gender Distribution

GENDER	TOTAL	PERCENTAGE
Male	30	60
Female	20	40

Table 3: Indications of Upper GI Endoscopy

INDICATION	N=50	PERCENTAGE (%)
Difficulty in swallowing	05	10
Upper GI bleed	20	40
Persistent vomiting	04	8
Dyspepsia	06	12
Iron deficiency anemia	04	8
Abdominal (epigastric) pain	06	12
Chronic weight loss	05	10

Table 4: SPO₂ - Before, During and After Endoscopy In Relation To Gender

	SPO ₂ % (mean± SD) ENDOSCOPY		
	Before	During	After
Male	98.62± 1.21	93.42± 1.85	96.98± 2.52
Female	98.85± 1.56	93.81± 2.95	98.21± 1.21

DISCUSSION:

Upper gastrointestinal endoscopy is a common diagnostic as well as therapeutic procedure and has great importance as far as gastrointestinal disorders are concerned [11-13]. The procedure should be performed with caution with minimum complications. But as it is invasive procedure so certain complications and adverse events can occur that needs to be explored and manage immediately to save the individuals from life threatening complication [14]. The common problems usually observed are complication in relation to sedation, infections, perforation, bleeding and respiratory includes the drop of oxygen saturation during and after the procedure, thus needs to be monitor by using pulse oximeter [15]. Previously it was observed that approximately 20-60% individuals suffered with oxygen desaturation despite of non sedation during endoscopy [16]. Common factors responsible for drop of oxygen saturation are intubation difficulty, age, and co-morbidity, cardiovascular and respiratory pathology.

In present study the de-saturation was detected in 22 patients suggestive of over stimulation of sympathetic activity during the procedure. Javid G, et al identified mild and moderate desaturation in 25% & 15% of patients with direct proportionality to advance age, smoking habit and hemoglobin level [17]. Of fifty the de-saturation was identified in 22 patients of which mild oxygen desaturation (SPO₂ < 95%) in 8 (36.3%) of the patients, moderate oxygen desaturation (SPO₂ 90- 95%) in 9 (40.9%) and severe desaturation (SPO₂ <90%) in 5 (22.7%) patients the findings are consistent with Iwao T, et al [18]. Rozario L, et al observed oxygen desaturation after giving sedation for procedure and recommended supplemental oxygen during endoscopic procedures while sedating the patient [19]. Osinaike BB, et al concluded that mild to moderate hypoxia is common during endoscopic procedures with no life threatening consequence but recommended special monitoring for older patients, individuals with co-morbidities and the procedure > 30 minutes duration [16].

CONCLUSION:

The present revealed transient hypoxic events during endoscopy and did not lead to significant pathology. Thus in elderly subjects and the individuals with co-morbid conditions or in the patients with pre existing lung diseases oxygen saturation should be monitored during the endoscopic procedure.

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