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Original Research Article

The Prevalence of Different Comorbidities among Patients Reporting To Preanaesthetic Clinic in a Tertiary Care Hospital: A Prospective Observational study

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Abstract

Introduction: The role of anaesthesiologist has changed from providing anaesthesia during surgery to the role of perioperative physician. The aim of preoperative assessment is to identify prevailing comorbidity, assessment of control of pre-existing disease and optimising patient for surgery. In order to provide safe anaesthesia it is of prime importance to identify the presence of disease in preoperative period.
Aim: To determine the prevalence of different comorbidities among patients reporting to preanaesthetic clinic (PAC).
Result: A total 5124 patients were studied in a period of 6 months. A total of 1724 comorbodities were identified in 1274 patients. Out of these 1374 diseases were identified for the first time in PAC. The most common abnormality detected was ECG changes.
Discussion: Identification of pre-existing comorbidities in the preoperative clinic is imperative for optimal management of patient. Knowledge of pre-existing disease will help to formulate screening strategies in the preanaesthetic clinic.
Conclusion: The finding of this study demonstrates the importance of a pre anesthetic clinic in detecting hidden co morbid condition in a sizeable patient population.
Keywords: Comorbodities, ECG changes, Perioperative physician

1. Introduction

Anaesthesia has evolved in to a branch where it is in the process of being synonymous to perioperative medicine. The Pre anaesthetic clinic is an important aspect with regard to this practice. The first reference to the concept of preanaesthetic evaluation dates back to 1949 where Lee introduced the Pre evaluation Clinic.[1] Subsequently there has been a lot of development and roles assigned to the functioning of the PAC which stems from the fact that these clinics play an important role in optimizing patients for surgery. Moreover it offers opportunity for establishing rapport with the patient, provides means to alleviate fear and anxiety among patients. It improves the perioperative experience for the patient by developing a team approach among surgeons, anaesthesiologist, nursing and diagnostics. It aids in development of practice guidelines aimed at patient safety, minimal investigation and cancellation of surgeries.[2] Surgical mortality and morbidity are not primarily the consequence of the surgical procedure rather also of the patient's preoperative physical status. The preoperative anaesthetic visit is aimed primarily to detect and accurately estimate the severity and effects of such medical conditions on patients and course of procedure.[3] The pre-anaesthetic assessment helps determine the anaesthetic risk, optimize co morbid illness, plan anaesthetic technique and postoperative care to reduce the morbidity and mortality associated with surgery.[4–6] The preoperative assessment consist of a detail history and

physical examination in addition to adjunct investigations based on the patient profile. Preoperative diagnostics have shown to reduce perioperative risks and some tests such as electrocardiogram and haemoglobin tend to be a valuable baseline assessment. However the utility routine testing in all patients is debatable and might add to increased cost of health care.[6]

Since its inception, Preanaesthetic clinics have become an integral part of perioperative care and numerous studies have shown its utility and advantage in improving patient care.[3,6] Numerous studies exist detailing the role of preanaesthetic checkup in developed countries, but studies in developing countries are sparse. In a developing country, the preanaesthetic checkup is frequently the first comprehensive checkup the patient receives, and may be the place where diseases are detected for the first time. Hence the most common co-morbidities and the demographic data from previous studies in developed countries might not be applicable to our setting.

The presence of more than one co-morbid condition increases the risk of complication.[8] Hence, identification of patients who are at increased risk of perioperative morbidity and mortality, assessing the effect of pre-existing illnesses and designing strategies to reduce these risks form basis of a optimal preanaesthetic evaluation.

The aim of this study was to find the prevalence of comorbidity among patients undergoing elective surgery presented to the preanaesthetic clinic.

2. Method

With the approval of ethical committee this prospective observational study was conducted at two tertiary care hospitals. A Preanesthesia clinic (PAC) runs regularly and validates its assessment for a month since last reviewed. All the data of preoperative assessment were compiled at the end of the day. A total of 5124 patient was studied over 6 months. A standard pre assessment form containing 22 variables i.e. Name, Age, Sex, Weight, Diagnosis, Surgery, Hypertension, Diabetes mellitus, Asthma, COPD, Allergy, Other co morbid condition, Personal history of Smoking and Alcohol intake, Lab investigation Haemoglobin, Urea, Creatinine, ECG (Normal, IHD and Block Pattern), ASA Grade, freshly detected disease, details of new diseases, and reason for postponement of surgery was used to collect data in all the patients. The data was tabulated and SPSS 14.0 statistical software was used to analyse the data.

3. Result

A total of 5,124 patients were consecutively included in this study (**Table 1**). Out of 5,124 patients, 52.86 % were male and 47.13 % were female. A total of 1274 patients had a total of 1724 medical issues requiring further investigations or specialist consultation. Of these medical problems detected, 1374 issues were identified for the first time in the PAC and 762 were pre existing illnesses. The majority of patients presented for preanaesthetic clinic for inguinal hernia surgery. The distribution of type of surgery and ASA status is shown in **Table 2** and in **Figure 1**. Out of 5,124 patients, 3037(59.2 %) patients were in ASA I where as 1778(34.6%) in ASA II, 211(4.1%) in ASA III, 98(1.9%) in ASA IV and 114(2.22) patients were found to have significant co morbidities (in ASA III and ASA IV)

The most common referral from the PAC clinic was to the cardiologist followed by medical specialist. The period of delay from presentation to acceptance of case for surgery varied between 2 days to 21.5 days depending on the type and severity of illness (**Table 3**). Preoperative laboratory testing was defined as any laboratory test obtained within 30 days of surgery. Laboratory tests included in the study were haemoglobin, serum creatinine and blood sugar. Abnormality in lab values was considered if haemoglobin <11g%, blood sugar level >200g% and serum creatinine >1.5mg% (**Table 4**).

Among the samples tested 44.12% were found to be anaemic, 3.4% had abnormal serum creatinine and 3.9% had raised blood sugar levels (**Table 4**). The predictive value of positive test for diabetes mellitus was 27.53 % and predictive value of negative test for Diabetes mellitus was 97.37 %.

The most common abnormality found preoperatively was changes in ECG (10.05%) followed by hypertension (**Table 5**). All the abnormalities encountered during pre-anaesthesia check up are depicted in **Figure 2**. The most prevalent ECG abnormality was conduction blocks. The various defects in different age groups are shown in **Table 6.**

Table 1: Demographic data

Age	No. of cases (%)	Male (%)	Female (%)
Pediatrics **(0-12)**	488(9.5)	277	211
Adult **(13-65)**	3404(66.4)	1730	1674
Elderly **(>65)**	1232(24)	702	530
Total	**5124**	**2709 (52.86)**	**2415 (47.13)**

Table 2: Type of Surgery for which patient reported to PAC

Type of surgery	No. Patients
General Surgery	1754
Orthopedics	333
Neurosurgery	213
Urology	214
ENT	113
Gynecologic	859
Thoracic	12
Reconstructive	239
Oncosurgery	211
Ophthalmology	820
Others	356

Figure 1: ASA status of patients attended for pre-anaesthesia check up

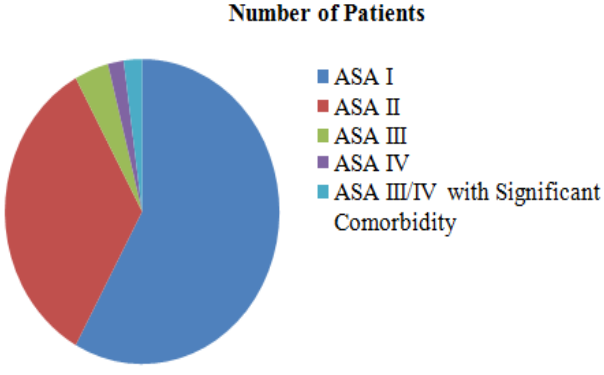

Table 3: Reason for postponement of cases, and average delay between identifying disease and final acceptance

Reason for postponement of case	Average delay between identifying disease and final Acceptance (in days)
Incomplete Investigation	3.59
Investigations not done	3.33
Refer to Medical Specialist for hypertension	7.27
Refer to Medical Specialist for Diabetes Mellitus	11.88
Refer to cardiologist	2.33
Advise to review with old document of disease	2.14
Refer to Medical Specialist for Anaemia	13.42
Refer to Medical Specialist for Asthma	2
Refer to Nephrologist	5.5
Pulmonary Tuberculosis/COPD	4.5
Thyroid disorder referral	21.5

Table 4: Prevalence of Abnormal Preoperative Laboratory Results

Laboratory tests	Reference range for normal values	No. of tests In sample (%)	No. of abnormal results in sample
Hemoglobin (g/dL)	>11 gm%	5124	2261
Creatinine (mg/dL)	< 1.5	2135	74
Glucose	<200	2022	79

Table 5: Number of Patients Identified with Illnesses for the first time in the preanaesthetic checkup room, as an independent number and as proportion of total patients

Details of new illness	Number of Patient with new illnesses	Proportion of total Patients
ECG Abnormality	515	10.05
Hypertension	372	7.25
Diabetes Mellitus	98	2.47
Anemia	251	4.89
Asthma/ COPD	121	2.36
Thyroid Disorder	8	0.15
Murmur	2	0.03
IHD	27	0.84
Renal Dysfunction	2	0.04
HBSAG Positive	1	0.01

Figure 2: Number of Patients Identified with Illnesses for the first time

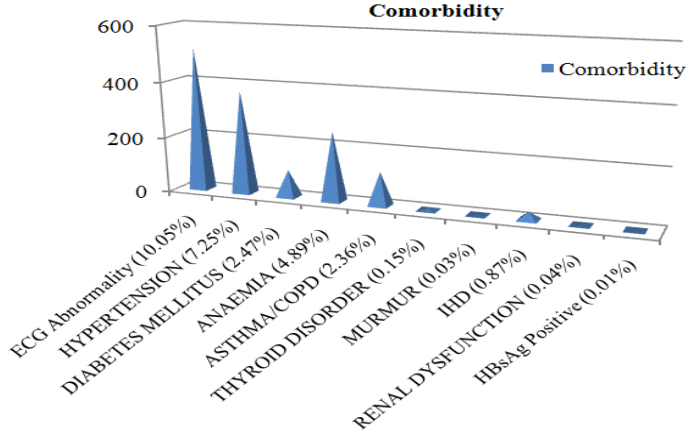

Table 6: Percentage of patients having abnormalities determined by screening ECG

Age	Sex	Patient Examined	Total Abnormalities	Normal	Block pattern	IHD
< 40	Male	481	7	376	4	3
< 40	Female	465	12	345	10	2
40- 60	Male	787	49	587	17	32
40- 60	Female	638	40	447	15	25
60-75	Male	635	73	400	22	51
60-75	Female	445	41	323	13	28
➢75	Male	136	20	102	3	17
>75	Female	65	10	55	3	7

4. Discussion

This prospective study aimed to find out the frequency of detection of the pre-existing systemic diseases which were earlier not diagnosed, hence giving a comprehensive picture of the characteristics of the patient population reporting for preanaesthetic checkup in a tertiary care hospital.

PAC started for surgery primarily in between 1940 to1960 with mainly history taking and physical examination and in next decade even laboratory test were included in PAC.[1] Before the advent of PAC clinics, patients were admitted and evaluated a day before surgery. This was associated with significant delay and cancellation of case. As per our study, average delay ranged from 3 days to 21.5 days in case of endocrine disorders. This emphasis the need for assessment and optimization of endocrine disorder at least a week before surgery. Nearly 25% of the population presenting to the PAC clinic was found to have a new systemic disease in our study. In India where the rural population forms the majority of the patient, PAC can act as first point of contact in detection of illnesses. This might serve as a screening clinic to detect long term chronic diseases and improve the general health of the population as a whole.[2] Most common comorbidity identified in PAC clinic has been hypertension or cardiac disease. The prevalence of conduction blocks in ECG in this population was 10.05%. This reinstates the need for screening ECG in our country where general population do not have access to advanced investigations or periodic assessment as compared to developed nations. The prevalence of anemia was found to be 44%; this could be due to the inherent problem of poor nutrition in the population and using a cut off 11g% as per WHO standards. PAC clinic can function as an OPD clinic where any new illness detected can be investigated further and followed up to giving a holistic approach to diagnosis. Over the past 20 years, research has raised questions about the value of routine medical testing before elective surgery. In an attempt to limit preoperative medical testing to patients with specific indications, a variety of guidelines have been developed. A proper clinical examination and identification of systemic involvement can guide further investigations and referral.

Patient interaction and opportunity for developing a rapport with the patient is limited for an anaesthesiologist. PAC can provide a platform for betterment of patient care and can serve as prospect for discussing the worries and anxieties associated with surgery. It also acts as a ground for risk stratification and preparedness for surgery. This aspect is especially significant in cases of difficult airway where special equipments need to be arranged. The drawback to the OPD design of PAC is that the same anaesthesiologist might not be available when the patient comes back from referral or after optimisation. This can be reduced by making specific dates and having fixed OPD days for different specialties. This study also demonstrates the usefulness of a structured questionnaire to assess presence or absence of systemic illnesses. Presence of an institutional protocol on the course of action in event of detection of an abnormality will ensure uniformity in management and optimization of the patient.

5. Conclusion

The findings revealed a pre anesthetic clinic is one of major OPD in each hospital that during the course of evaluation detects hidden co morbid condition in a sizeable patient population. It has optimally reflected the effectiveness of anaesthesia out-patient department in detection of the undiagnosed diseases for conduct of safe anaesthesia. Similarly a satisfactory post-surgical outcome is primarily due to good team work surgical team and particularly the scientific and evidence based assessment of perioperative physicians. Detection of any comorbid condition in perioperative period and timely optimization preoperatively significantly reduces the surgical morbidity and mortality. Emphasis is given that every anaesthesiology department must run a comprehensive Pre-anaesthetic assessment clinic (PAC-OPD) for patients planned for any surgical /invasive procedures.

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