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RATIONALIZE PRACTICE AND REDUCTION OF WORK LOAD AT GENERAL HOSPITAL RETROSPECTIVE STUDY OF 802 PATIENTS

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Abstract:

Background: Patients undergo few unnecessary investigations for detection of asymptomatic disease during routine preoperative assessment. **Method:** The aim is to find out unnecessary investigations carried out in elective general surgical patients during the period of March to August 2013. Investigations which evaluated were CBC, RBS, RFT, S. Electrolyte, LFT, ECG, CXR and urine analysis. **Observations** Percentages of unnecessary investigation were calculated. Percentages of abnormal investigations were assessed in the terms of how many patients were required treatments for that abnormal investigations and whether the plan of anaesthesia was changed or not. Only 10-13% of patients showed abnormal values in investigations related to biochemistry while 13.46% of patients of less than 40 years of age showed abnormality in ECG but none of them required any treatment before surgery or did not have any adverse event during peri-operative period. Only 4.18% of patients of more than 40 years of age showed abnormality that required treatment. Only 5.73% of patients aged more than 40 years were needed treatment for abnormal CXR results. **Conclusion:** Investigations Protocol for preoperative patients to reduce workload of hospital is suggested.

Introduction

Patients undergo investigations for detection of asymptomatic disease during routine pre-operative assessment. The probabilities of finding significant abnormalities on such “routine” investigations are small and lead to unnecessary increase work load to the various departments¹. This may cause harm to the patient due to over treatment for borderline or false positive results. Hence the indiscriminate use of such investigations remains a matter of discussion since the work load may increase with no change in perioperative management⁴.

The aim of this retrospective study was to assess the number of unnecessary preoperative investigations in patients admitted for general surgery and thus to minimize the work load of hospital.

Material and Methods

All patients who underwent elective general surgery during the period of March to august 2013 were included. High risk patients of ASA grade III, IV and on emergency basis were excluded. Investigations evaluated were CBC, RBS, RFT, S Electrolytes, LFT, ECG, CXR and urine

analysis. Data was collected with the permission of authority. In our institute, the preoperative assessment forms for all elective surgical patients are filled and attached to Indoor case paper. We are having all the records of investigations done and advised or any intervention if needed along with any adverse event occurred intra-operatively. The Data was collected and analyzed using SPSS software. Categorical data were described using mean and standard deviation and compared using unpaired student t test. P value of < 0.05 was considered statistically significant.

Table 1: Characteristic of study population

Characteristic	Number of patients	Percentage (%)
Gender		
Male	379	47.3%
Female	423	52.7%
Age (years)		
Less than 40	556	69.32%
More than 40	246	30.47%
ASA classification		
Grade I	545	67.95%
Grade II	257	32.04%
Surgical grading		
Minor (grade I)	198	24.7%
Major (grade II)	604	75.3%

Table 2: Associated diseases

Characteristic	Number of patients	Percentage (%)
Hypertension	123	15.3%
Diabetes mellitus	73	9.1%
Bronchial asthma	61	7.6%
Ischemic heart disease	43	5.4%

Investigations

Table 3: Biochemistry

Investigations	Normal	Abnormal
	NO. Of pts	NO. Of pts
CBC	716(89.27%)	86(10.27%)
Urine analysis	802(100%)	00(0%)
RFT	742(92.51%)	60(7.48%)
S.Electrolytes	697(86.90%)	105(13.09%)
LFT	705(87.90%)	97(12.09%)

Table 4: According to age

Investigation	Age < 40 years		Age > 40 years		P value
	Normal	Abnormal	Normal	Abnormal	
CBC	534(96.04%)	22(3.96%)	182(73.98%)	64(26.02%)	< 0.05
Urine analysis	556(100%)	00(0.0%)	246(100%)	00(0.0%)	< 0.05
RFT	553(99.5%)	03(0.5%)	189(76.82%)	57(23.18%)	< 0.05
S.Electrolytes	533(95.90%)	23(4.1%)	164(66.66%)	82(33.34%)	< 0.05
LFT	521(93.7%)	35(6.3%)	217(88.21%)	29(11.78%)	< 0.05
CXR	389(69.96%)	167(30.04%)	115(46.75%)	131(53.25%)	< 0.05
ECG	180(86.54%)	28(13.46%)	128(52.03%)	118(47.97%)	< 0.05

Table 5: Chest X ray and ECG

Investigations	Chest X ray	ECG (done in 454 patients)
	No. of patients	No. of patients
Normal	504(62.84%)	308(67.84%)
Abnormal	252(31.42%)	127(27.97%)

(didn't require treatment)		
Abnormal (require treatment)	46(5.73%)	19(4.18%)

Table 6: surgical procedure

Surgery	Number	Percentage
Inguinal hernia	133	16.58%
Para umbilical hernia	60	7.48%
Hydrocele	57	7.11%
Lap chole+ CBD exploration	78	9.72%
Lap appendicectomy+Open Appendicectomy	121+60	22.57%
Breast surgery	66	8.23%
Circumcision	63	7.86%
Pyelolithotomy	66	8.23%
Excision	79	9.85%
Varicose veins	19	2.37%

Results

Retrospective study was done in 802 surgical patients for analysis of preoperative investigations. As per table 1, in our study 69.32% of patients were less than 40 years of age and 67.95% of patients were normal and healthy (ASA grade 1). Six hundred and four (75.30%) patients had undergone major (grade 2) surgery.

Only 37.4% of patients had major illness like hypertension, diabetes mellitus, bronchial asthma, ischemic heart disease. (Table 2)

Investigations like CBC, RFT, S. Electrolytes, LFT and Urine analysis were normal in more than 90% of patients having less than 40 years of age. (Table 4)

Only 10-13% of patients showed abnormal values in biochemistry investigations.

In biochemistry investigations, significant abnormality was found with CBC.

In CBC (26.02%) of patients found abnormality in Hb which showed mild anaemia, it was found in patients of more than 40 years of age. It may be because our hospital is situated in poor socioeconomic area. (Table 4)

In our study all patients were undergone CXR, out of which 62.84% normal and 37.16% abnormal, out of them only 5.73% of patients required treatment.

ECG was performed in 454 patients, out of which 67.84% normal and 32.15% abnormal, out of them 4.18% of patients required treatment.

None of the patient had shown any perioperative adverse events.

Discussion

Preoperative assessment is a key process in minimizing morbidity of surgery¹. Several recent articles and editorials have suggested that too many preoperative investigations are performed and that their useful yield is low³. These do identify a higher risk group of surgical patients.

Majority of our sample population was healthy patients undergoing grade I (minor) and grade II (major) of surgical procedures. Biochemistry investigations were normal in more than 90% of patients.

Only 13.46% of patients of less than 40 years of age showing abnormality in ECG but none of them required any treatment before surgery or did not have any adverse event during perioperative period. In more than 40 years of age, 47.97% of patients showed abnormality and out of them 4.18% of patients required treatment for that. So it is advisable to do ECG in more than 40 years of age to rule out cardiac problem.

CXR was abnormal in 30.04% of patients in less than 40 years of age and 53.25% of patients in more than 40 years of age though only 5.73% of patients aged more than 40 years of age were needed treatment for that. This higher number of abnormality is because of endemicity of tuberculosis in our country². A National study by the Royal college of Radiologists in 1979 proposed that routine CXR should be performed where the prevalence of undiagnosed chest condition is likely to be high⁵.

This study confirms that only a few numbers of abnormal results were found from routine preoperative investigations in 802 patients admitted for elective surgery.

It was observed that most of the time investigations for surgery were advised by surgical resident in the OPD before referring the patient to anaesthesiologists, and they advised all investigations available in hospital so that there is no chance of postponement of the patient and patient gets operated as early as possible.

Age was significantly associated with incidences of abnormal results and complications³. In this study age was found as best indicator of excluding routine investigations in surgical patients³.

Routine complete blood count seems unlikely to be fruitful in asymptomatic patients younger than 40 years. Low haemoglobin was the only significant haematological abnormality noted.

Investigations related to biochemistry had an extremely low yield of abnormal results in routine surgical patients. From our findings routine testing seems to be indicated only in patients over 40 years of age posted for major surgery³.

Conclusion

A large number of healthy young patients are admitted for surgery and we have shown clearly that they do not require routine tests. So that each unit or hospital should establish a protocol regarding routine preoperative investigations in order to maximise the yield from these tests and prevent waste of resources and work overload.

We recommend the following remedies

1. Education of surgical and anaesthetic teams on current practices ¹.
2. Adoption of guidelines on preoperative investigations aiming to modify existing practices ¹.
3. To develop a preanaesthetic clinic in the institution.

References

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