

Pre Operative Investigations: Should We Adopt Health Technology Assessment Guidelines In Developing Country? - A Retrospective Study

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Abstract: Background and aims: Preoperative assessment and preoperative investigations are compulsory before elective surgery. Preoperative routine testing was begun before 40 years and has expanded to include many of routine diagnostic tests performed today. Many guidelines are developed by various countries for these preoperative investigations to prevent the unnecessary investigations and overburden to the hospital. The aim was to find out unnecessary investigations carried out in elective general surgical patients during the period of March to August 2013 in our hospital. Methods: A retrospective study of 802 patients from their preoperative assessment forms was done. Various blood investigations, Chest X ray and Electrocardiogram were evaluated. The Data was collected and analyzed using SPSS software. Results: 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 before operation. ECG was done in 454 patients only. Out of them 13.46% of patients had abnormal finding in younger age group (less than 40 years of age) while 47.97% of patients in older age group (more than 40 years of age). Blood investigations were normal in more than 90% of patients. Conclusion: The hypothesis of unnecessary investigations was true with the biochemical investigations except Haemoglobin level which was low in majority of patients but for Chest X ray and Electrocardiogram the p value was not significant. [Kamla M NJIRM 2016; 7(5): 55-58]

Key words: preoperative investigations, preoperative assessment, poor socioeconomic area, preoperative guidelines

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Introduction: Preoperative routine testing before elective surgery began 40 years ago and has expanded to include the plethora of routine diagnostic tests performed today. As technology advances enabled the collection of large amount of data, the medical community adopted the "more information the better" philosophy as a way to improve quality and reduce the costs of care of patients. Initially this routine testing was incorporated into care maps to standardise diagnostic and treatment regimes, but today these tests are done to detect the prognostically important abnormalities prior to surgery. However opponents argue that the results of these tests are rarely used in clinical practice and that testing contributes to a substantial increase in costs without any corresponding benefit to the patients, anaesthesiologists, or surgeons.¹ Several health technology assessments (HTAs) on routine testing in elective surgery have been published during the last 20 years.²⁻⁹

Several studies had shown that the unnecessary investigations were advised for preoperative testing for elective surgery.¹⁰ This all guidelines and studies made us to do a survey in our hospital regarding unnecessary investigations. An aim for this retrospective study was to find out the unnecessary investigations in our institute during preoperative

assessment. And the hypothesis was unnecessary investigation were carried out in our institute. But while analysing the data our hypothesis was changed that should we follow all this guidelines for our patients or not. As this all guidelines and studies are from developed countries.

Methods: This retrospective study of 802 patients was carried out at Shardaben general hospital, Saraspur. All patients who underwent elective general surgery during the period of March 2013 to August 2013 were included. Records were collected from record room after 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. High risk patients of ASA grade III, IV and on emergency basis were excluded. Investigations which evaluated were CBC, RBS, RFT, S Electrolytes, and LFT, ECG, CXR and urine analysis. 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.

Results: Total 802 patients' records were analysed. All patients were from surgical department only. All patients were scheduled for elective surgeries. Table 1 shows the demographic data. Only ASA Grade I and II were included in this study. Two third surgeries were major and one third was minor surgeries. According to the age group, the altered investigations were shown in Table 4. ECG was done in 454 patients only. Out of them 13.46% of patients had abnormal finding in younger age group (less than 40 years of age) while 47.97% of patients in older age group (more than 40 years of age).

Table 1: Demographic data

characteristics	No. of patients	Percentage
Gender		
Male	379	47.30%
Female	423	52.70%
Age(years)		
<40	556	69.32%
≥40	246	30.47%
ASA grading		
I	545	67.95%
II	257	32.04%
Surgical grading		
Minor	198	24.70%
Major	604	75.30%

Discussion: Preoperative assessment is a key process in minimizing morbidity of surgery. Several recent articles and editorials have suggested that too many preoperative investigations are performed and that their useful yield is low. 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. In our institute we were not following any foreign guidelines for advising preoperative investigations. Biochemistry investigations were normal in more than 90% of patients. So the hypothesis of unnecessary investigations was true with the biochemical investigations except Haemoglobin level which was low in majority of patients. It may be because of poor nutrition.

Table 2 shows the data of patients having associated diseases during preoperative assessment.

Table 2: Associated diseases		
Diseases	No.of patients	Percentage
Hypertension	123	15.3%
Diabetes mellitus	73	9.1%
Bronchial asthma	61	7.6%
Ischemic heart disease	43	5.4%

Table 3: Blood (biochemistry) investigations were as per

Table 3: Biochemistry		
Investigations	Normal	Abnormal
	No.of patients	No.of patients
CBC	716(89.27%)	86(10.27%)
Urine analysis	802(100%)	00(0%)
RFT	742(92.51%)	60(7.48%)
S. Electrolyte	697(86.90%)	105(13.09%)
LFT	705(87.90%)	97(12.09%)

(CBC- complete blood count, RFT-renal function test, S- serum, LFT- liver function test)

Table 4: According to the age

Investigations	Age < 40 years (n-556)		Age ≥ 40 years (n-246)		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(99.50%)	03(0.5%)	189(76.82%)	57(23.18%)	<0.05
S. Electrolytes	533(95.90%)	23(4.10%)	164(66.66%)	82(33.34%)	<0.05
LFT	521(93.70%)	35(6.30%)	217(88.21%)	29(11.78%)	<0.05
CXR	389(69.96%)	167(30.04%)	115(46.75%)	131(53.25%)	>0.05
ECG(454 patients)	180(86.54%)	28(13.46%)	128(52.03%)	118(47.97%)	>0.05

(CXR- chest x ray, ECG- electrocardiogram)

Age was significantly associated with incidences of abnormal results and complications. In this study age was found as best indicator of excluding routine investigations in surgical patients. 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 biochemical testing seems to be indicated only

in patients over 40 years of age posted for major surgery.

Table 5 shows the total number of normal and abnormal finding in CXR and ECG.

Table 5: Chest X ray and ECG			
Report	Chest X ray	ECG(done in 454 patients)	P Value
	Number of patients (%)	Number of patients (%)	
Normal	504(62.84%)	308(67.84%)	> 0.05
Abnormal (didn't require treatment)	252(31.42%)	127(27.97%)	> 0.05
Abnormal (required treatment)	46(5.73%)	19(4.18%)	

Preoperative assessment is the clinical investigation that precedes anaesthesia for surgical or nonsurgical procedure, and it is the responsibility of anaesthesiologists. The aim of this Preoperative assessment are to reduce the risk associated with surgery and anaesthesia, to increase the quality of perioperative care, to restore the patient to the desired level of function and to obtained the informed consent from the patient for the anaesthetic procedure.¹¹

Table 6 showed the type of surgical procedures which were performed on the patients.

Table 6: Surgical procedures		
Name of procedure	No. of patients	Percentage
Inguinal hernia	133	16.58%
Para umbilical hernia	60	7.48%
Hydrocele	57	7.11%
Lap.cholecystectomy+ CBD exploration	78	9.72%
Lap.appendicectomy+ open appendicectomy	121+ 60	22.57%
Breast surgeries	66	8.23%
Circumcision	63	7.86%
Pyelolithotomy	66	8.23%
Excision	79	9.85%
Varicose veins	19	2.37%

(Lap. – Laparoscopic, CBD- common bile duct)

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 before operation. This higher number of abnormality is because of endemicity of tuberculosis in our country. A National study by the Royal college of Radiologists in 1979 proposed that routine CXR also. Many patient are first time diagnose their disease like diabetes, blood pressure, ischemia, high cholesterol etc. In future when these persons seek

should be performed where the prevalence of undiagnosed chest condition is likely to be high.¹² As per the National TB statistics for India, India is the country with the highest burden of TB. The World Health Organization (WHO) statistics for 2014 give an estimated incidence figure of 2.2 million cases of TB for India out of a global incidence of 9 million. The estimated TB prevalence figure for 2014 is given as 2.5 million.¹³ It is estimated that about 40% of the Indian population is infected with TB bacteria. Despite this case detection rate continues to be low.¹⁴ patients take their history of long term cough as usual and do not go for testing but when some operation arise then they have to go for it and diagnose their disease.

Regarding ECG, 13.46% of patients of less than 40 years of age showed abnormality while 47.97% of patients of more than 40 years of age showed abnormality. Asymptomatic ECG changes are common in females of menopausal age group and persons who have family history, behavioural pattern and with type A personality.^{15,16} This showed that numbers of persons are having minor chest pain but they consider it as muscular pain or take it as usual but when come to the hospital for any operation, their investigations and ECG shows abnormality. Our hospital is situated in poor socioeconomic area and so the population are illiterate or less educated. They do not go for medical checkup regularly because of lack of knowledge and lack of time too. But when they have some surgical problem like hernia, piles, appendicitis, cholecystitis and many more then they come to the general hospital to seek the treatment. While doing preoperative assessment if we can do their all investigations then it will work as a health check up

treatment for their problem then they might show their previous file.

Conclusion: All HTAs guidelines are made for developed country. We should make our own guidelines for preoperative assessment of our patients. In our Biochemical investigation are unnecessary advised which can be curtailed by developing our own guidelines. One should remain liberal in advising cardiogram for preoperative assessment in young adult patients in general hospital.

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