

Comparison of Presumptive Diagnoses in the Emergency Department and the Final Diagnoses in the Wards

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SUMMARY

Objective: The emergency departments (EDs) are considered as the front line of the hospitals. Patients with various chief complaints come to ED and get treatment; some are cured and discharged where some need hospitalization. Our aim was to compare the impressions of emergency medicine (EM) physicians with the last diagnosis of the wards.

Methods: This is a prospective, cross-sectional study. All patients brought into the ED of Imam Reza Hospital, Tabriz, from March 20th to June 21st, 2008 who needed to be admitted in internal medicine, neurology, neurosurgery, surgery and infectious diseases wards were included. The first impressions following the first examination in the ED and the Presumptive Diagnoses (PD) which led to admission and the final diagnosis which was made in the wards were compared. The results were analyzed using SPSS 15.0.

Results: Of the total 93.5% of the PD, which were made by the EM physicians were the same with final diagnosis made by the ward's physicians. PD in the ED and final diagnoses in the internal, neurology, neurosurgery, surgery, infectious diseases were the same in 93.3%, 97.1%, 100%, 88.6%, 87.5% of the cases respectively.

Conclusions: Sometimes the wards physicians have doubt on the diagnoses made by the EM physicians. In this study, we found that, although there is a lot of limitation in presence of diagnostic tools and time pressure at the EDs, the EM physicians can diagnose most of diseases properly.

Key words: Diagnosis; emergency medicine; presumptive diagnosis.

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Introduction

Emergency department (ED) is one of the most important wards in a hospital and its function has important effects on the other parts of the rest of the hospital as well as in the level of general public's satisfaction. It plays an important role in reducing mortality and morbidity by making correct and quick diagnosis and providing proper treatment.

Medicine deals with critically ill and injured patients in its daily practice where diagnostic accuracy can mean the difference between life and death. Because the patients present with variety of chief complaints, emergency medicine (EM) specialists must possess necessary skills and the knowledge in approach to life threatening problems in order to provide correct diagnoses and therapies. The diagnosis made by EM specialist has often been doubted by the other services^[1] and admission of patients in their wards depends on their own residents' or physicians' visits, which makes the ED even more crowded and busy.

Repeated visits by various physicians and parallel work ups increase the costs and create dissatisfaction among the patients. Furthermore, work ups and the use of clinical tools by emergency medicine specialists overlaps with other specialists' work ups and this may create a kind of competition sense and misuse and may seem as interfering in each other's territory.

Achieving a high degree of diagnostic accuracy is very important in the practice of medicine. It reflects not only the professional competency of the practitioners, but it also affects the quality of subsequent patient care.^[2]

The aim of this study was to investigate if in spite of laboratory investigation and time limitations in ED in comparison to elective patients, the PD made by EM specialists are consistent with the final diagnoses made by other specialists in the wards. In order to have a judgment on diagnostic abilities and consequently the clinical ability of the EM specialists, who are generally expert in all the different fields, in this study we tried to compare the first impressions made in ED with the diagnoses made in the wards by the wards' specialists.

Local studies in the field of ED admission diagnoses are limited. It was hoped that comparison of ED admission and ward discharge diagnoses would give a picture on the existing performance of the ED, and also serve as a baseline for future reference in continuous quality improvement. By showing such ability of ED physicians, we can

propose that in hospitals with specialized EDs, the EM specialists can manage the referred patients relating to other fields as well as their own field. The EM specialists can safely provide initial management for referred patients with variety of complaints.

Materials and Methods

Study Design: This was a prospective, cross-sectional study of Presumptive Diagnoses (PD) made in the ED by EM specialists and the final diagnoses in the wards made by the particular service's specialists. 353 patients were studied. The intention was to evaluate the ability of EM physicians and specialists in appropriately diagnosing the patients presenting to the ED. For this evaluation we compared the diagnoses made in ED with the final diagnoses of the patients when discharged from wards. The first impression in the ED was the diagnosis made by the EM practitioners based on the clinical manifestations and physical examination of the patients presented to the ED. The Presumptive Diagnosis (PD) was the final diagnosis made in ED when the patient was either discharged or admitted to the hospital wards by EM physicians, considering both clinical and laboratory imaging study findings. The diagnosis which the patient was discharged with after being admitted to the related ward was considered as the final diagnosis. Because physicians could be affected by a word or manner after a simple contact (telephone conversation or examination of the patient in the ED), such consultation were avoided for the study population.

Study Setting: The patients referred to the Accident & Emergency Department of Imam Reza Hospital, a public general hospital, in Tabriz, Iran, from March 20th to June 21th, 2008, who went through the clinical and diagnostic evaluations in the ED by EM residents and specialist and were later admitted and hospitalized in one of the internal (gastroenterology, endocrinology, nephrology, rheumatology, hematology and pulmonology), neurology, neurosurgery, surgery or infectious diseases wards were included in the study. Patients visiting ED with conditions other than those (such as cardiology, orthopedic, gynecology, etc.) were stabilized in the ED before being transferred to appropriate centers for more work ups and admission, and therefore they were excluded from the study.

Because the ENT (Ear, Nose and Throat), urology and some other wards have a few emergent patients and most of them come electively; they were all excluded from the

study as well. The patients who were referred from the university clinics and attending offices with definite diagnosis were excluded, too. The patients with no clear final diagnosis in ED, for example a patient who was hospitalized for more workups, were also excluded. Patients, who had visited ED before and had a diagnosed condition, as well as the patients brought into ED with complications of underlying diseases, were also not included.

Trauma patients, after entering the ED, are usually referred to different specialized hospitals such as orthopedic centers or surgical centers in many cases. Because of multiple problems these patients have, they are usually admitted in different wards (neurosurgery, neurology, etc.) based on a single admission record, so they were excluded, too.

One can mention a mass of patients who do not belong to the group of patients seen in the ED and admitted to the wards still having two different diagnoses made by two different specialties. This group was not studied because the final decision on either discharging or admitting the patient in the ward is made by the EM specialist without any other specialist seeing the patient before admission. This group of patients, too, was excluded from the study.

Data Analysis The data were entered into SPSS 15.0. Descriptive statistics were used for all data analysis.

Results

Of the 645 patients referred to the ED according to the inclusion criteria, only 353 were included in the study. Out of these, 208 of the patients were hospitalized in internal wards, 24 in infectious diseases' department and 68 in neurology and others.

Mean age of the patients was 54 ± 20 ; the youngest was 13 years old and the oldest was 95 years old. 52.7% of patients were male and 47.3% were female.

In total, 97.2% of ED first impressions agreed the Presumptive Diagnoses (PD) which led to admission of the patient, while at the same time, 93.5% of PDs before admission were the same as the final diagnosis made in wards.

Table 1 shows the degrees of accuracy between first impressions and PD made in ED by EM specialists and residents and final diagnoses in wards.

Table 2 shows disease specific degrees of accuracy between first impressions and Presumptive Diagnoses (PD) made in ED by EM specialists and residents and final diagnoses in different wards. The highest accuracy was seen in neurosurgery (SOL [Space Occupying Lesion] and acute on chronic subdural hemorrhage) with 100% agreement between the PD and final diagnoses in wards, whereas the minimum accuracy was seen in diagnoses of pancreatitis (82.4%) and meningitis (84.9%).

Discussion

This was the first local study on assessing the correlation between ED diagnoses on admission and hospital discharge diagnoses. There have been only a few similar studies in the world literature. The degree of specificity and accuracy achieved in these studies has been satisfactory as a whole. Chiu et al. reported that of all admission diagnoses, 71.4% fully or partially matched the final discharge diagnoses. The accuracy of diagnosis was statistically better in traumatic cases, the male sex and young adults.^[2] Goh et al. reported achievement of a high degree of accuracy of diagnosis for surgical disciplines (82.9% for general surgery, and 95.8% for orthopedic surgery), and an acceptable degree of accuracy (77.6%) for general medicine.^[1] In our study, we found a satisfactory level of accuracy between the first impression in ED and the final diagnoses made in the wards in neurosurgery, neurology

Table 1. Degree of accuracy of first impressions and presumptive diagnoses

Ward	Male/Female ratio	Mean age	Accuracy of first ED impression with presumptive diagnosis	Accuracy of presumptive diagnosis in ED with final diagnosis
Neurology	57.4/42.6	62.7 \pm 18.7	100%	97.1%
Neurosurgery	55.4/44.6	54.5 \pm 19.8	100%	100%
Surgery	68.8/31.4	52 \pm 18.6	100%	88.6%
Infectious diseases	45.8/54.2	55.2 \pm 19.1	83.3%	87.5%
Internal	49.5/50.5	51.5 \pm 20.5	97.1%	93.3%

Table 2. Degree of accuracy for specific diagnoses made in the ED and in the wards

Ward	Diagnosis	Accuracy of first impression in ED with presumptive diagnosis in ED	Accuracy of presumptive diagnosis in ED with final diagnosis in wards
Neurology	Ischemic stroke	100%	98.5%
	Intracranial hemorrhage	100%	98.2%
	GBS	100%	96.3%
	MS	100%	95.4%
Neurosurgery	SOL	100%	100%
	Acute on chronic subdural hemorrhage	100%	100%
Surgery	Appendicitis	100%	92.8%
	Bowel obstruction	100%	90.9%
	Arterial thrombosis	100%	88.3%
	Pancreatitis	100%	82.4%
Infectious diseases	Pneumonia	87%	90.1%
	Meningitis	79.6%	84.9%
Internal medicine	Lung and respiratory system diseases	98.1%	94.1%
	Gastro-intestinal tract diseases	97.7%	94.1%
	Nephrology	97.1%	93.2%
	Endocrinology	96.8%	93.1%
	Rheumatology	95.8%	92%

and internal medicine fields. We believe the low rate of accuracy in some units is due to the limitation of time and investigation tools in ED, as more time and workup is needed for several diagnoses such as pancreatitis.

Other studies propose that further improvements are required especially in geriatric and pediatric patients. As pointed out by some authors, training doctors in the specialty of EM should include the unique needs and diagnostic peculiarities of emergency disorders in elderly persons.^[3,4]

One way to improve and arrive at a specific diagnosis and have a higher degree of diagnostic accuracy is to encourage the listing of a few specific differential diagnoses after each consultation.^[5] The ability of presenting sets of differential diagnoses for every patient should be emphasized during undergraduate and postgraduate training of doctors.

As simple investigations like X-ray, bedside urinalysis, electrocardiography and blood tests are not that helpful in improving the ED diagnostic accuracy. In order to improve the accuracy, history taking and physical examination are the two armamentariums that one can resort to. Thus it is fundamental for doctors working in ED to mas-

ter the skill and art in performing history taking and physical examination in an efficient manner.^[2]

More liberal use of the observation unit may also help to improve the accuracy of ED diagnosis. The observation unit is especially useful for conditions without clear diagnoses even after testing, e.g. abdominal pain, and for diseases that have variable and subtle presentations e.g. suspected acute appendicitis.^[6] Diagnostic accuracy can be improved if patients can be observed and reassessed a second time, some time later for change in their symptoms and signs.^[2]

Conclusion

According to our results the Presumptive Diagnoses of the emergency physicians were mostly consistent with the final diagnoses made in the wards by the ward physicians. This leads to an accurate choice of treatment in emergency settings, which is most important in cases where promptly initiated treatments affect the prognosis and outcome. Improving this consistency in all services is needed and the ways should be studied in more advanced studies.

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