Clinical cardiology consultation at non-cardiology departments: stepchild of patient care?

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Abstract

Background Although patient care in cardiology departments may be of high quality, patients with cardiac disease in other departments tend to receive less attention from cardiologists. Driven by the shorter duration of admission nowadays and the fact that consultations are often performed in between the daily work schedules, the amount of cardiac disease as well as the impact on the daily workload can be underestimated. We determined characteristics, prevalence of cardiac disease and in-hospital mortality of patients in whom cardiology consultation was requested.

Method In this prospective, observational study, individual data of all consecutive patients admitted to non-cardiology departments in whom cardiology consultation was requested were registered.

Results During the study period, 264 patients were included. Mean age was 70 years. Most patients were admitted to the internal medicine ward (37 %), followed by the surgical ward (30 %). The most common reasons for cardiology consultation were: suspected heart failure (20 %), suspected infective endocarditis (15 %), suspected rhythm abnormalities (14 %) and suspected acute coronary syndrome (13 %). In 29 % of all consultations a cardiac diagnosis was found. Hospital mortality was 9.0 %.

Conclusion Patients who are admitted to a non-cardiology department and who need cardiology consultation are particularly elderly people with a high prevalence of cardiac disease and high in-hospital mortality. For these reasons cardiology consultation is an important part of clinical cardiology deserving a structured approach.

Keywords Cardiology consultation · In-hospital mortality · Older patients

Introduction

Cardiology consultation in patients admitted to non-cardiology departments is part of daily routine cardiological practice. However, patients with concomitant cardiac disease admitted to other departments may receive less attention from cardiologists. Given the fact that admission duration is now becoming shorter [1], the extent of cardiac disease may be underestimated and adequate treatment denied. In addition in-hospital patients requiring cardiology consultation are a relatively underexposed patient group [2]. To address these issues we determined characteristics, prevalence of cardiac disease and in-hospital outcome of patients for whom cardiology consultation was requested at non-cardiology departments.

Methods

Location

The study was performed at Isala Clinics, one of the largest, non-academic hospitals in the Netherlands, located in the city of Zwolle with 1100 beds for in-patients serving the

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municipality and surrounding areas. It is the result of the fusion of two former city hospitals (Sophia and De Weezenlanden). Awaiting the construction of a new facility, there is a temporary situation in which the hospital is divided in two separate locations. The Weezenlanden location provides a full cardiology service, being an interventional cardiology centre in close collaboration with the department of cardiothoracic surgery. The pulmonology, neurology, urology and orthopaedics departments are also situated at the Weezenlanden. The non-cardiology location (former Sophia Hospital) houses the following departments: Internal medicine and its subdivisions, surgery (including general, plastic and neurosurgery), gynaecology, psychiatry, paediatrics and emergency medicine.

Population

In this prospective, observational study all in-hospital patients who were admitted to the non-cardiology location for whom cardiology consultation was requested were registered, during a four-month period from June until October 2010. The main inclusion criterion was that the consultation had to be performed during regular business hours from 08:30 to 17:00 h. There were no specific exclusion criteria. Short telephone consultations without actual patient contact were not registered. To avoid double inclusion, only the first consultation request was included in the registry. Individual data of each included patient were recorded. The primary endpoint was in-hospital mortality.

Statistical analysis

Data were analysed by use of comparison between groups. Continuous variables are expressed as mean $\pm$ SD or median and compared by use of Student's *t*-test, whereas discrete variables are given as absolute values and percentages. The Chi-square test was used to compare proportions. All statistical tests were performed two-sided, with a *p* value of <0.05 considered as statistically significant.

Results

During the study period, 264 consecutive consultations were requested. Baseline characteristics are shown in Table 1. The mean age was 70 ± 15 years and 42 % of patients had a history of cardiac disease, mostly due to coronary artery disease. The main admission reasons were (suspicion of) infectious disease, non-cardiac surgery and trauma (particularly bone fractures). Most consultations were requested for patients admitted to the internal medicine ward (37 %), and the surgical ward (30 %), the other consultation patients were admitted to the nephrology, gastroenterology, intensive care, emergency and psychiatry wards. In Table 2 reasons

Table 1 Baseline characteristics of in-hospital patients ($n=264$) referred for cardiology consultation (%)

Male	49
Age (mean in years)	70.2 ± 15
Previous cardiac history	41.6
–Coronary revascularisation (CABG/PCI)	13.6
–Atrial fibrillation	6.0
–Myocardial infarction	5.6
–Heart failure	4.5
–PM/ICD	4.5
–Isolated valve surgery	3.4
–Other	3.8
Admission reason	
–Infectious disease (or suspicion of)	21.9
–Non-cardiac surgery	16.3
–Trauma	10.2
–Abdominal pain/pathology	9.5
–Renal failure	4.5
–Malignancy	7.6
–Syncope	5.6
–Shortness of breath	4.5
–General discomfort	4.5
–Bleeding	3.4
–Chest and back pain	2.7
–Thromboembolic disease	2.3
–Diabetic dysregulation	1.9
–Psychiatric disease/confusion	1.5
–Other	3.6

CABG coronary artery bypass grafting, *ICD* implantable cardioverter-defibrillator, *PCI* percutaneous coronary intervention, *PM* pacemaker

for cardiology consultation are given: suspected heart failure in 20 %, suspected infective endocarditis in 15 %, suspected

Table 2 Suspected cardiac disease and other reasons leading to cardiology consultation in 264 in-hospital patients, admitted to non-cardiology departments (%)

Heart failure	20.4
Infective endocarditis	15.2
Arrhythmia	14.0
Acute coronary syndrome	13.3
Cardiac involvement (not further specific)	10.2
Pre-operative evaluation	8.7
ECG abnormalities	4.9
Cardiac murmur	3.4
Medical advice (not by telephone)	3.4
Source of cardiac emboli	1.5
Hypotension	1.5
Pericardial effusion	1.1
Aortic dissection	0.8
Miscellaneous	1.5

Table 3 Comparison of characteristics with regard to the primary endpoint (in-hospital mortality) in 264 patients requiring cardiology consultation

	In hospital mortality (n=24)	Survivors (n=240)	P value
Mean age (years)	80	69	<0.01
Male (%)	38	50	NS
Cardiac history (%)	58	40	NS
Admission wards: internal medicine and surgical (%)	67	65	NS
Admission reason: infectious disease (%)	38	20	0.07
Cardiac diagnosis (%)	54	30	0.03

rhythm abnormalities in 14 % and suspected acute coronary syndrome in 13 % of the patients, were the most common reasons. Additional transthoracic echocardiography was performed in 188 patients (71 %). Of these echocardiograms 40 % revealed normal findings. Transoesophageal echocardiography was performed in 21 patients (8 %), mainly for suspected infective endocarditis. In 29 % of all consultations a cardiac diagnosis was found. As expected there are differences between the number of suspected and confirmed diagnoses. In 17 % of the patients with suspected infective endocarditis, the diagnosis was confirmed. For patients with suspected arrhythmias this was more than 50 %. Although in 66 % of patients a ‘wait and see’ policy was sufficient, 11 % of patients required intensive cardiological co-treatment and 10 % of the patients had to be transferred immediately to the cardiology department. After discharge 13 % of patients were scheduled for follow-up at the outpatient department for further evaluation and/or treatment. The mean admission duration was 11 days, (range 0–98 days). All-cause in-hospital mortality was 9.0 %. In two patients a direct cardiac cause of death was identified. Table 3 shows that the mortality occurred in older patients, who were more often admitted with infectious disease and had significantly more cardiac disease in comparison with the in-hospital survivors.

Discussion

Our study shows that patients admitted to non-cardiology departments who need cardiology consultation are mostly

elderly people who have a high prevalence of cardiac disease and a high in-hospital mortality. Furthermore, we found that consultations have an important impact on daily cardiological workload with regard to additional diagnostic tests, relatively long admission duration and follow-up. Despite these facts, it is remarkable how little attention is given to this specific part of cardiological practice. We found just one recent analysis of 125 consultations, performed in an Irish academic hospital [2], revealing that consultations represent an important part of the workload of a cardiology department and consume significant resources. However, outcome data with regard to morbidity and mortality of the consultation patients were not given. Most other reports particularly pay attention to consultation of patients with known or suspected cardiac disease who undergo risk stratification before non-cardiac surgery, in a non-urgent setting [3]. Among these patients, traditionally, those with coronary artery disease are well described and regarded as high risk.

A large, recent analysis of 38,047 patients also revealed the importance of heart failure and atrial fibrillation, conditions which were associated with higher risk than coronary artery disease, even in minor surgical procedures [4].

The effect of cardiac co-morbidity, however, is not limited to surgical risk assessment. At Isala Clinics, the in-hospital mortality rate of all hospitalised patients in 2009 was 1.97 %, with a national mean of 2.1 % for all Dutch hospitals [5]. In our study population it was 9 %.

Fig. 1 Suggested structured approach for performing clinical cardiology consultation

According to our findings mortality occurred in patients who were significantly older with a higher frequency of cardiac disease. This is also illustrated by a recent analysis of acutely hospitalised elderly patients (mean age 78 years). For cardiovascular co-morbidity the odds ratio for mortality within 3 months after discharge was 1.55 (0.46–5.17) [6]. For these reasons diagnosis of cardiac disease and subsequent adequate treatment in clinical consultation patients is very important and should be given special attention. In addition, with the growing number of elderly people in our society, referral of in-hospital patients for cardiology consultation will presumably increase and cost-effectiveness of patient care will play a more important role. Good communication and efficient use of additional diagnostic tools is essential for current and future patient care. We therefore recommend to perform consultations by a structured approach (Fig. 1), in which all patients are seen within 24 h.

Study limitations

Our study has several limitations. First of all for logistic reasons the study was performed at only one location of the hospital, therefore particularly clinical pulmonology and neurology patients were not included in the study. Secondly, we did not record the time course between admission date, consultation referral and consultation performance, which is important with regard to efficiency. Finally, we had a relatively small patient group, although it is the largest group of studied clinical cardiology consultation patients published, as far as we know.

Conclusion

Patients who are admitted to a non-cardiology department and who need cardiology consultation are particularly elderly people with a high prevalence of cardiac disease and high in-hospital mortality. For these reasons cardiology consultation is an important part of clinical cardiology, deserving a structured approach.

Conflict of Interest No

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