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Descriptions and presentations of sepsis – A qualitative content analysis of emergency calls

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ABSTRACT

Background: Sepsis is a serious condition which requires early treatment. We often fail to recognize sepsis patients in the chain of prehospital care. Knowledge of how sepsis is expressed in calls to the emergency medical communication centre (EMCC) is limited. An increased understanding could lead to earlier identification of patients with sepsis.
Objective: The aim of this study was to describe the descriptions of sepsis used during communication between the caller and the emergency medical dispatcher (EMD).
Methods: To achieve the aim of the study, an inductive approach of qualitative content analysis was used. In total, 29 consecutive patients, who arrived at the emergency department by ambulance and received a diagnosis of sepsis according to the International Classification of Diseases (ICD)-10, were included in the study. For each case, the corresponding emergency call recording from the EMCC was transcribed verbatim. Main categories and subcategories from the text were abstracted.
Results: From fifteen subcategories, three main categories were abstracted: "Deterioration", "Physical signs and symptoms" and "Difficulties establishing satisfactory contact with the patient." The way laymen and professionals expressed themselves seemed to differ.
Conclusions: Sepsis was described in terms of the physical symptoms, changes of condition and communication abilities of the patient. This knowledge could lead to the identification of keywords which could be incorporated in the decision tool used by the EMD to increase sepsis identification, but further research is required.

1. Introduction

Sepsis is a serious condition with a mortality rate of approximately 20% (Wenzel, 2002). For septic shock the mortality rate can be as high as 45% (Wenzel, 2002). The incidence of sepsis in the United States of America (USA) is approximately 240/100 000 citizens (Martin et al., 2003). The incidence is increasing and possible explanations for the increase are the population growth, the ageing of the population, more patients being treated with invasive procedures, a greater use of immunosuppressant drugs and an increase in HIV and antibiotic-resistant infections (Rangel-Frausto, 1999).

Time is critical for the outcome of septic patients. A delay in antibiotic administration has been shown to increase mortality (Kumar et al., 2006). Half of all emergency department (ED) patients with severe sepsis, and one-third of patients treated for an infection, are transported by the emergency medical services (EMS) (Wang et al., 2007, 2010). Patients with severe sepsis arriving with the EMS receive antibiotics more quickly in the ED. A documented sepsis impression by the EMS provider decreases the time interval even more (Studnek et al., 2012). Additionally, protocolized sepsis identification in the ambulance appears to be feasible (Wallgren et al., 2014). Thus, identification of sepsis in the prehospital setting is both possible and important for patient care, but due to the often non-specific presentations of sepsis, remains challenging.

The emergency medical dispatcher (EMD) plays an important role in the continuum of emergency care. Early identification of serious conditions by the EMD has been shown to shorten the ambulance arrival time on scene and reduce mortality in cardiac arrest (Berdowski et al., 2009), while no such studies exist for the septic patient. There is no specific mention of sepsis in the protocol used by Swedish EMDs today (SOS Alarm AB, 2001) and to our knowledge, no previous publication concerning how sepsis might be described during the emergency call or how the EMD can identify the septic patient (Herlitz et al., 2012). The aim of this study is to describe the presentations of sepsis during the communication between the caller and the EMD.

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2. Methods

2.1. Design and analysis

A qualitative descriptive approach was chosen because of the lack of previous knowledge regarding sepsis presentation when contacting the EMCC (Fevang et al., 2011; Herlitz et al., 2012). To start with an open mind helped widen the picture and made it possible to find descriptions that might otherwise have been overlooked (Graneheim and Lundman, 2004).

Authentic emergency call recordings were collected and transcribed verbatim for every included patient. Data were analyzed using content analysis (Graneheim and Lundman, 2004). Multiple authors were involved in the data analysis to decrease the chance of individual biases influencing the research findings. Authors reviewed each transcript, used open coding to code the key messages in each passage, organized the codes into common groupings, and began to identify the categories. The thematic development is exemplified in Table 1.

The study was conducted with the approval of the ethics committee in Stockholm, dnr: 2011/2013-31/5.

2.2. Data collection and setting

All patients were treated at the ED of Södersjukhuset, Stockholm, Sweden which is one of the busiest EDs in northern Europe, with more than 115 000 patients per year.

2.2.1. Inclusion and exclusion criteria

All patients with an ICD-10 code compatible with sepsis at discharge from hospital were included consecutively between November 30th 2011 and February 12th 2012. Since the aim of the study was to evaluate sepsis presentations to the emergency medical call centre, it was important to include patients who had signs of sepsis, during their ED visit (as described below), which was a proxy for having signs and symptoms during their call to the medical call centre. Therefore, a patient was assumed to have ongoing sepsis in the ED if the term "sepsis" was used in the ED medical record or if broad spectrum antimicrobial agents used to treat sepsis had been administered. The patient was also assumed to have sepsis in the ED if the patient had vital signs fulfilling the sepsis criteria (Bone et al., 2009). A patient was excluded if he or she arrived at the hospital by other means than by ambulance, or if the patient did not have a presentation compatible with sepsis during the ED visit, as defined above. If the recorded call was not found or the caller did not speak Swedish (i.e. the qualitative analysis), it was also excluded. Finally, 29 patients were included (Fig. 1).

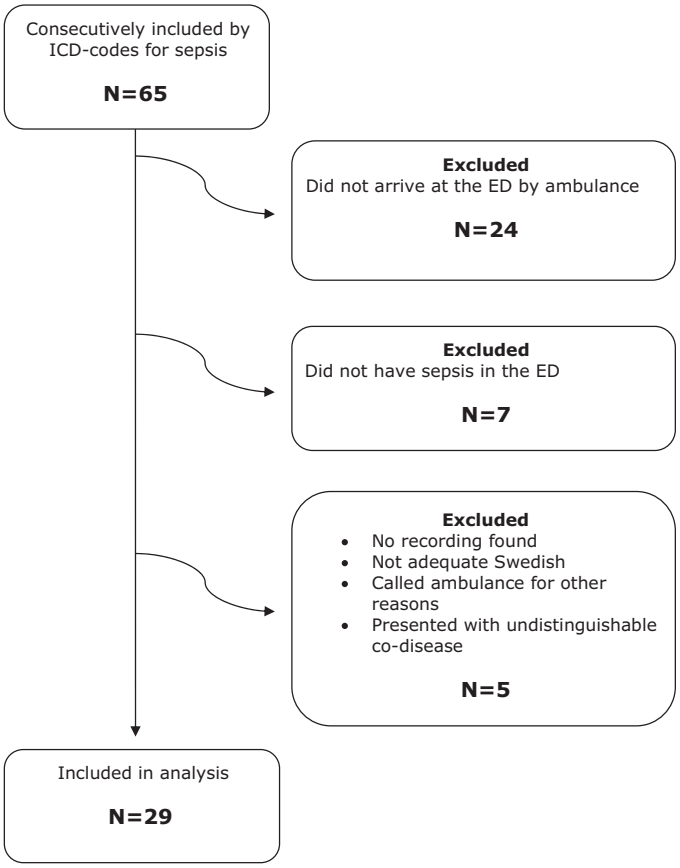

Fig. 1. Flowchart of included and excluded patients in the study.

2.3. Patient population

2.3.1. The patients

The age span of the included patients was between 50 and 95 years. Median and mean age were both 80 years. The patient was a female in 55% (n = 16) of the calls.

2.3.2. The callers

Most commonly, the caller was either a nurse (n = 15) from a nursing home, geriatric care centre, or sheltered housing, or a relative (n = 10). Other people calling were the police (n = 1), geriatrician (n = 1), home care service (n = 1) and the Swedish medical care hotline (n = 1). In none of the cases, did the patient call by him or herself.

Table 1
Examples of condensation and abstraction of the analysis unit in this study, using qualitative content analysis.

Meaning unit	Condensed meaning unit	Code	Sub-category	Main category
This is apparently, according to the staffs who knows her, a quite lively old retiree who is normally ambulant and the one who. . . She is the most vivid there in the department. . . Yes, like that and. . . up and walking around and helping and yes, you know. And now she has just been lying down.	She is the most vivid in the department, but now she has just been lying down.	Just lying down	Weakness	Deterioration
EMD: I understand. So you notice a significant difference, there? Caller: Yes, absolutely. Since yesterday, there is definitely a change and I feel that. . . he probably needs a bit more advanced care.	Since yesterday, there is definitely a change.	New change for the worse	Sudden deterioration	

EMD = Emergency medical dispatcher.