Hospital Infections in the Pediatric Intensive Care Unit: 4-Year Evaluation 2010-2013

Dear Editor,

I read with interest the article by Dr. Hacimustafaoglu et al. entitled “Hospital Infections in the Pediatric Intensive Care Unit; 4-Year Evaluation 2010-2013” (1).

I would like to draw attention to the following points related to the article:

1) Healthcare-associated Infections (HAI) is an important cause of morbidity and mortality involving serious financial burden. The children who were treated in intensive care units were exposed to various invasive procedures; thus, these children were more susceptible to HAI. The rate of HAIs, the factors affecting the emergence of HAIs, the types of microorganisms that cause HAIs vary from country to country and from unit to unit (2-4). There are few studies on this issue in pediatric intensive care units (PICUs) in Turkey (2, 3). Therefore, I believe that this work is an important contribution to the literature of Turkey.

2) Performing active surveillance is important for identifying HAIs and for reducing HAI rate by taking the necessary measures. In the article, the determination of HAIs seems reliable as HAIs were identified by the Pediatric Infection Unit and Hospital Infection Control Committee using active surveillance (1). I believe that it is important that the article pointed out the rate of HAI and the density of HAI; thus, the unit is comparable with other units (1). In addition, to perform active surveillance more effectively, infection control committees should cooperate with the doctors and nurses working in intensive care units.

3) In our country, there are significant differences in terms of structural, technical, manpower, and experience in PICUs. These will affect the HAI rate among the units (3, 4). Therefore, it is necessary to describe the features of the PICU where the research was performed in detail. The comparisons can be made more effective and the preventive measures can be taken. In this article, if the authors gave more information about the unit (pediatric intensive care subspecialist; number of patient/number of nurse ratio, etc.), the research may be more useful.

4) To use the various scoring systems indicating the risk of death or severity of disease (Pediatric Logistic Organ Dysfunction, Pediatric Risk of Mortality, and Pediatric Index of Mortality, etc.) in PICU is beneficial for the objective assessment of the patient profile. The severity of disease may increase the risk of HAI (4). In the article, the readers did not have enough information for the patient profile (disease severity of patients) because the scoring systems have not been specified.

5) Various invasive procedures (mechanical ventilation, central venous catheter, urinary catheter, etc.) are often used in PICU. Utilization rates and duration of these instruments are risk factors for HAI (3, 4). For example, Dursun et al. (3) showed that the duration of mechanical ventilation, duration of central venous catheters, and duration of urinary catheters were significantly longer in patients with HAI. This article reported the infection rate associated with device use (1). However, the device utilization rates and durations were not specified. In my opinion, the rate of infection associated with the use of specified instrument when reported in an intensive care unit indicate that the rate of instrument and duration of instrument provide more accurate information that allow comparison with other units.

Best regards.

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Evaluation of Deep Neck Infections in Childhood

Dear Editor,

Deep neck infections cause serious morbidity and mortality. Life threatening complications may develop. Early diagnosis, followed by rapid and appropriate treatment is very important. I think that Salı et al.’s study (1) is very important in terms of increasing the awareness of these infections.

Deep neck infections can be divided, by anatomical region, into retropharyngeal, peritonsillar and parapharyngeal infections. Although deep neck infection incidence is observed to decrease, it seems to have increased in recent studies. In the United States, according to KIDS’

Inpatient Database in 2009, it was reported that the number of paediatric retropharyngeal and parapharyngeal abscesses was 3444 and incidence 4.6/100.000, total hospital costs was more than 75 million dollars and had a major health burden (2, 3).

Deep neck infections are polymicrobial. The major bacterial pathogens are *Streptococcus pyogenes, Staphylococcus aureus* (MRSA included) and respiratory anaerobes. Infections start as cellulitis and can progress to abscess. Often they develop as a result of suppuration of lymph nodes located in this region and sources of infection are mostly upper respiratory track and odontogenic infections (2).

Usually peritonsillar abscess is common in teens and retropharyngeal abscess between ages two and 4 and parapharyngeal abscess often at the age of six. Clinical presentations in children with peritonsillar abscess are sore throat, fever, a hoarse voice, drooling and trismus. In oropharyngeal examination, the deviations of uvula to the opposite side and fluctuated tonsil are defected. The diagnosis can be made clinically. Retropharyngeal and parapharyngeal abscesses cannot clinically be distinguished. The main clinical features are trismus, dysphagia, neck pain, limitation in neck movement, neck mass, odynophagia and fever. Oropharynx examination in children with deep neck abscess may be difficult as children don't easily open their mouths. Children with upper airway obstruction symptoms should be examined where intubation or tracheostomy procedures can be available and medical intervention can be implemented. It may cause life threatening complications such as airway obstruction, jugular vein thrombosis, mediastinal involvement, cerebral aneurysm, arterial erosion and sepsis. In a study in Taiwan, it was reported that the rate of complications in children with deep neck infection was 11.6% and mediastinal abscess, prevertebral abscess, acute purulent thyroiditis, bacteraemia, fistula development towards outer ear were reported (4). In the USA, in a study conducted in 2009, it was reported that complications developed in 4.8% of children with retropharyngeal and parapharyngeal abscess and respiratory failure, sepsis and mediastinitis were trhe most common complications, respectively (3).

Imaging is essential in the evaluation of deep neck abscesses. Contrasted CT is more desirable as it shows the anatomical details. CT reveals the difference between abscesses and cellulitis, abscess spread to the neighbouring spaces, and the position of the internal jugular vein and carotid artery in planning the surgical approach. Sensitivity and specificity of CT in predicting the abscess in surgery is variable; they are reported to be 64-100% and 45-82% respectively (2, 5).

The patients hospitalised due to deep neck infections should be followed together with an otolaryngologist. Empirical antibiotic therapy should be started. There are debates in deep neck infections reading whether first line treatment should be medical or surgical one. Usually, medical treatment is started in patients who do not have respiratory track obstruction symptoms. In patients with peritonsiller abscess who do not respond within the first 24 hours and those with retropharyngeal and parapharyngeal abscess without a response within 24-48 hours, surgical intervention is recommended. In a medical literature search carried out between 1992-2009, in which a conservative medical approaches in deep paediatric neck infections was evaluated, it was reported that when children did not have airway obstruction or neurovascular problem, conservative treatment could be safely used in treating the deep neck infections in children, but, that the quality of the data available was low (5). Concerns regarding the conservative treatment are progression of the disease, increased morbidity and mortality. However, surgical intervention may also end up in morbidity (anaesthesia, postoperative scar, complications) and since significantly vital structures exit in deep neck spaces, implementation of surgical intervention in this region is risky. It has been reported that patients who undergo surgery have to stay in hospital for longer and their hospital costs are higher. Salı et al. (1) also reported in their article that the hospital stay of patients who underwent surgery were longer. It has also been reported that patients with streptococcal infection and dyspnea/stridor were more likely to receive surgical intervention; in the presence of lymphadenopathy and fever, on the other hand, the possibility of surgical intervention is low (3).

In conclusion, although easy access to the health institutions, and dramatic reduction in mortality and morbidity in deep neck infections together with the advent of imaging methods and antibiotics, complications still exist. There has not been a consensus regarding the treatment of these infections; some authors recommend aggressive surgical drainage and some medical treatments. Regarding the treatment approach, not only the imaging methods, the clinical status of the patients should be evaluated as well. Upon the admittance of a child with swelling or a mass on the neck, the deep neck infection should always be considered in the differential diagnosis.

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Retrospective Evaluation of 35 Pediatric Tuberculosis Cases Proven by Histopathological and/or Microbiological Analysis

Dear Editor,

I read the article titled "Retrospective Evaluation of 35 Paediatric Tuberculosis Cases Proven by Histopathological and/or Microbiological Analysis" by Gencer et al. (1) with great interest. Due to the insidious clinical course of paediatric tuberculosis and the difficulties in making the diagnosis, I'd like to thank the authors for sharing the data of proven paediatric tuberculosis case series that were diagnosed and treated within the period of 4 years.

In 62 (59%) cases out of 105 children diagnosed with tuberculosis by the Department of Paediatric Infections of Uludag University between 2005-2010 Emergency who were followed up with a diagnosis of pulmonary tuberculosis, it was found that the rate of making a diagnosis through the microbiological examination of sputum and/or gastric fluid hunger was 27.4% (17/62) (2). Among the extrapulmonary tuberculosis cases diagnosed and treated in the same period in Bursa, peripheral tuberculosis lymphadenitis cases were the most frequent (18%); it was found that there was 94.7% caseous necrosis and granulomatous inflammation in the histopathological samples and 15.8% AFB positivity and *Mycobacterium tuberculosis* growth in the culture of totally 19 cases (3). In the same period in Bursa again, the diagnosis was made by the definitive diagnosis microbiological examination (AARB+ and in the culture *M. tuberculosis*+) in 84.6% and 15.4% by histopathological examination of 13 genitourinary tuberculosis cases (4). 18.2% of 11 patients with tuberculous meningitis monitored during the same period, definitive diagnosis was made by the microbiological examination (5). Briefly, as far as the evaluation of all the patients with tuberculosis in the subgroups of the same centre was concerned, it was found that microbiological diagnosis rate was 27.6% (29/105), and histopathological diagnosis rate, 19% (20/105). In a study done Coşar et al. (6), it was reported that microbiological diagnosis rate in 44 paediatric cases with tuberculosis was 18.1%, histopathological diagnosis rate 9%. In a study by Kurt et al. in which 39 patients with tuberculosis were followed up for 7 years, it was reported that AARB positivity in MAS was 30%, growth in culture 11%, and histopathological diagnosis rate 5.1%. In a multi-centre study involving 115 paediatric cases with tuberculosis, Cinel et al. (8) reported that microbiological diagnosis rate was 11.3% (13/115), histopathological diagnosis rate 19.1% (22/115). Gencer et al. (1) reported that AARB positivity was 40% and growth in culture 62.5%. Since the study included proven tuberculosis cases, high rates are an expected result. As there is no similarly planned study done in Turkey, comparison of these rates has not been possible. Different microbiological and histopathological diagnosis rates in other studies can be attributed to the fact that those studies were carried out in different health institutions, in different time periods and in laboratories where different techniques were used.

It is my opinion that As far as I am concerned, as far as the proven case series of children with tuberculosis published by the authors, and all the tuberculosis patients selected among them (including the suspicious and possible tuberculosis cases) are concerned, microbiological and histopathological diagnosis rates obtained in the other studies done in Turkey have similarities. In other words, I am curious to get to know the rates of proven the tuberculosis patients out of all the tuberculosis patients they were selected from.

Sincerely,

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