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Common Infections Among Disabled Children Admitted to Hospital

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ABSTRACT

Background: Disability is a relatively common problem in children. The pattern of admission in these children and their common infections may differ from other children because of their special disabilities.
Objectives: We aimed to determine common infectious diseases resulting in admission of these children to our hospital.
Patients and Methods: Between September 2006 and September 2007, 60 disabled children aged between 4 months and 15 years were admitted to infectious ward of Mofid children hospital Tehran, Iran. A questionnaire was filled at the time of admission, containing particular details of their recent complaint. They were completely examined and the final diagnosis was established at the time of discharge.
Results: In this study 25 (42%) boys and 35 (58%) girls aged from 4 to168 months were included. The patients were divided practically into three groups: 21 patients (35%) with physical or developmental disabilities, 8 (13%) patients with mental or behavioral disabilities, and 31 (52%) patients with both developmental and mental disabilities. The common diseases among these children were lower respiratory tract infections (LRTI) in 24 patients (40%), urinary tract infections (UTI) in 8 patients (13.3%), and nonspecific infections in 9 patients (15%). Dental caries and periodontal problems were significantly higher in children having both mental and developmental disabilities this correlation was similar between different types of disability and skeletal deformity (P = 0.006). Children having both mental and developmental disabilities were admitted more than children with either of those disabilities (P = 0.08).
Conclusions: Lower respiratory tract infections were the most common reasons for admission of these children in our study, but we found no significant correlation between the type of disability and one special infectious disease. We need more prospective studies to complete our findings.

Keywords: Disabled Children; Infection; Diagnostic Tests, Routine

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Implication for health policy/practice/research/medical education:
Disable children need integrated care pathways due to various clinical presentations for different diseases. Integrated care pathways will enable to deliver proper services to them, if problems and their needs are clearly identified. We aimed to determine common infectious reasons in these children admitted to our hospital.

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1. Background

Disability is a relatively common problem in children. There are several definitions and dimensions of disability, including cerebral palsy (CP), developmental, mental, learning, and behavioral disabilities (1). Disability has been classified by disability resource center (DRC) into: physical, communicational, psychological, learning, developmental, acquired brain injury, and non qualifying conditions; however, other dimensions of disability are supposed on the American academy of CP disease management (2).

The "special needs children" is a term to describe young people (children and adolescents) who are experiencing serious and persistent physical, psychological, and/or social problems (3). By increasing the survival rate in these children, morbidity and hospitalization rates, also increases (4). These children with special health care needs and multi-system disorders require comprehensive primary care as well as medical and surgical consultative services.

In one study, annual costs of inpatient and outpatient services were $956 and $1554 per child, respectively(5). Previous studies have shown that these children should stay in the hospital longer than those without special needs. There is also evidence that these children constitute hospital admissions with an increasing rate in recent years (6, 7).

2. Objectives

These children need integrated care pathways due to various clinical presentations for different diseases. Integrated care pathways will enable to deliver proper services to them, if problems and their needs are clearly identified (8). We aimed to determine common infectious reasons in these children for hospital admission in our hospital.

3. Patients and Methods

Between September 2006 and September 2007, 60 disabled children aged between 4 months and 15 years were admitted to infectious ward, Mofid children hospital, Tehran, Iran. Having limitations in categorization of the patients, simply we broke them down into three major groups: physically disabled or having developmental delay, being mental and learning disabled, and having both developmental and mental disabilities. Any impairment which limits physical function of limbs, or fine or gross motor abilities is a physical disability. A mental disorder or mental illness is a psychological or behavioral pattern generally associated with subjective distress or disability that occurs in an individual, and perceived by the majority of society as being outside of normal development or cultural expectations (9-11). Patients with physical disability and developmental delay, mental retardation (moderate to severe learning needs), and/or both of them were included in our study.

Questionnaires were filled by trained pediatric residents at the time of admission. Particularly, details of their recent chief complaints and associated signs and symptoms (including fever and its duration, respiratory symptoms and their severity, vomiting, diarrhea, poor feeding, irritability, lethargy, and stage of decreased level of consciousness), type of disability (developmental, mental, or both), living place (within family or orphanage), number of hospital admissions, and their underlying diseases were recorded.

All of admitted children were completely examined and paraclinical work up were done based on primary diagnosis. The final diagnosis was established based on clinical, epidemiologic, laboratory, and radiological findings performed by a subspecialist of pediatric infectious disease. Then the files were evaluated and data analyzed by SPSS 11.5 software. Chi-square test was used for qualitative variables.

4. Results

Between September 2006 and September 2007, 60 disabled children were included in this study. Mean age was 53 months (ranging from 4 to 168) and median was 30 months. Of these patients, 25 (42%) were boys and 35 (58%) were girls.

Twenty one patients (35%) had developmental disabilities, eight patients (13%) had mental disabilities, and thirty one (52%) had both mental and developmental disabilities. Forty eight patients (84.2%) had history of pervious hospitalization, 32 of which (57%) were admitted more than two times. Children with both mental and developmental disabilities were admitted more than children with either of those disabilities ($P = 0.08$).

Fever and respiratory symptoms, both, were the most common complaints (51.7%). In 31 (51.7%) patients, decreased level of consciousness with different degrees was the most common associated symptom. We found no significant correlation between the type of disability and main chief complains ($P > 0.05$). Children with both mental and developmental disabilities, and children with only developmental disability had more respiratory signs than those with only mental disabilities, this correlation was statistically significant in chi square analysis ($P = 0.02$).

Fever was present in 52 (86.7%) patients, duration of which in 42 (80.7%) was less than one week and in 10 patients (19.2%) it was one week or more. We found no significant correlation between the type of disability and duration of fever in these children. Failure to thrive (FTT) was present in forty one (68%) children. A known underlying cause was found in 36 (60%) cases while it was unknown in 24 (40%) patients (*Table 1*).

Table 1. Underlying Disease in Disabled Children, Admitted to Mofid Children Hospital

Percent	No.	Disease
18.3	11	Cerebral palsy
13.3	8	TORCHS
11.8	7	Chromosomale disorders (i.e. Down syndrome)
10	6	Metabolic disorders
3.3	2	Craniosynostosis
3.3	2	Myelomeningocele
40	24	Unknown
100	60	Total

The common reasons for admission among these children were LRTI in 24 (40%), UTI in 8 (13.3%), and nonspecific infections in 9 (15%) patients (*Table 2)*. Statistically, there was no significant correlation between the type of disability and infections.

Table 2. Causes for admissions of Disabled Children to the Pediatric Infectious Ward of Mofid Children Hospital

Reasons for Admission Causes	No. (%)
Respiratory tract infections	
LRTI	24 (40)
URTI	1 (1.7)
Urinary tract infection	8 (13.3)
Sepsis	6 (10)
Febrile convulsion	4 (6.7)
Gastroenteritis	3 (5)
Brain abscess	2 (3.3)
Osteomyelitis	2 (3.3)
Myocarditis	1 (1.7)
Nonspecific infections	9 (15)
Total	60 (100)

Abbreviations: LRTI, lower respiratory tract infections; URTI, upper respiratory tract infection

Dental caries and periodontal problems were significantly higher in children having both mental and developmental disabilities. This correlation was similar between different types of disability and deformity of extremities (P = 0.006). Fifty two patients (86.6%) were living with their parents and 8 patients (13%) in orphanages; in the first group, 38% had lower respiratory tract infections, and in the latter group, it was 50% (P > 0.05).

5. Discussion

This study provided information about common sites of infection, presenting problems, and reasons by which disabled children were admitted to pediatric infectious ward. In this study, sixty cases were evaluated during one year. Lower respiratory tract infection was the major reason for admission (32% of cases), it was consistent with Mahon's study (4). Respiratory signs and symptoms, and fever were the most common presenting complaints. In the literature, breathing difficulties are among the most common presenting complaints in these patients (6, 8).

We found that children with developmental disability or both mental and developmental disabilities suffered from respiratory problems more than mentally disabled children (P = 0.02). CNS problems presenting with decreased level of consciousness, vomiting, irritability, and seizure can explain more susceptibility to respiratory tract infections as Mahon's findings (4).

We found dental caries and periodontal problems significantly higher in children with both mental and developmental disabilities than either mentally or developmentally disabled children (P = 0.006). Our findings were compatible with some studies that showed dental problems were more common in children with special health needs (12, 13). Dental and periodontal problems and aspiration of oropharyngeal secretions predispose recurrent respiratory infections in these patients.

Previous studies have shown that these children were staying in hospital longer than children without special needs. It is accepted that readmission to hospital is more common in children with special needs (4, 14, 15), which is similar to our findings. Forty eight patients (84.2%) were readmitted, 32 of them (57%) were admitted more than twice. Further work is required either to reduce the readmission or to provide alternative care that is convenient and safe.

There are some diagnostic mistakes on findings in disabled children. Most of those children are unable to talk about their problems or to show pain or uncomfortable main sites. Therefore, it seems necessary to look for original sites of problem such as ears and sinuses, teeth and gums, lower respiratory sites, and urinary tract. Using of proper guidelines and special child primary care can decrease high costs for children with special health care needs. Therefore, further evidence is required to design practical guidance for caregivers and parents as well as professionals.

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Authors' Contribution

This paper was designed and supervised by Abdollah Karimi.It was issued from thesis of Delara Babaie and collected specimens with her. Alireza Fahimzad and Se-

digheh Rafiei Tabatabaei wrote the paper and revised it critically. Ghazal Zahed performed the experiment.

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All authors have no conflicts of interest to declare, and do not have any financial or non-financial conflicts of interest.

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