

CAUSES OF CHILD LANGUAGE DISORDERS IN PATIENTS AT KATH, KUMASI, GHANA

ALBERT OSEI-BAGYINA, MSc.
School of Medical Sciences
Dept. of EENT
KNUST—Kumasi, Ghana

ABSTRACT

Convulsion, measles, meningitis and jaundice are predominant causes of disabilities related with child language disorders in patients at Komfo Anokye Teaching Hospital (KATH), Kumasi Ghana. The other notable factors are fever, head injury, Down's syndrome, marasmus, Caesarean operation, prematurity, hypoxia and prolonged delivery. These and other less significant factors resulted in aphasia (46.2%), hearing-impairment (46%), mental retardation (4.6%) and cerebral palsy (3%).

This article makes differential diagnosis of 437 language-disordered patients below age 6 years at KATH and finds out the etiological factors. The results are presented and discussed.

Keywords: *Causation, Differential Diagnosis, Etiological Categories, Causal Factors.*

INTRODUCTION

Myklebust [11] divided language disorders into those associated with hearing loss, emotional problems, aphasia and mental retardation. Van Riper's [16] four main divisions as causes of delayed language were: Sensory deprivation, neurological dysfunction, emotional disorganisation and experience deprivation, Filter [8], on the other hand, gave the following five broad areas as causes: hearing loss, neurological problems, emotional problems, environmental problems and mental retardation. The three authors above, all mentioned emotional problem as a cause of language disorders. While Myklebust and Filter mentioned hearing loss, Van Riper used sensory deprivation to mean the same condition. Additionally, Van Riper and Filter mentioned neurological problems but Myklebust used the word aphasia. Concerning mental retardation, Myklebust and Filter mentioned it while Van Riper

placed it under neurological problem. Finally, while Van Riper called the last condition experience deprivation, Filter called it environmental problem but Myklebust never mentioned it.

It was this type of causal identification which became associated with the medical model and which Aram and Nation [1] referred to as "etiologic typologies". Sadly, it was wrongly assumed at first that each etiological population was homogeneous but when the reverse was found to be true later, some clinicians became dissatisfied with the etiological classification. As time went on, the emergence of linguistics and psycholinguistics disciplines brought about new ways of describing and understanding normal children's language. Borrowing ideas from them, some professionals eventually developed new methods and tools that addressed the language parameters for the understanding, description and treatment of language disorders. Sadly again, the approaches developed in that era, viewed causation as irrelevant to the study of child language disorders [1]. Contrariwise, Emerick and Hatten [6] gave the following points (adapted) in support of causation:

- (a) (a) Differential diagnosis broadly directs therapy effort, it takes into account the client's handicap in the ensuing therapy
- (b) Knowledge of the etiological category and the typical group characteristics of rehabilitative growth pattern may aid in the prognosis
- (c) Perpetuating etiological factors should be identified and eradicated, if possible
- (d) Differential diagnosis may be helpful in preventing the recurrence of the behavioural syndrome in other members of the client's family.
- (e) When parents seeking help for their children's



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problems get to know the Cause, their feeling of guilt is lessened and they become comfortable as a result.

- (f) Such information will add to the diagnostician's basic knowledge of disorder types and help him in future diagnostic ventures.

According to Aram and Nation [1] we cannot ignore that the etiological practice holds real meaning to the profession of speech-language therapy, for the etiological classifications do exist in (a) training of professionals, e.g. Teachers of the deaf, (b) work settings, e.g. Mental retardation unit and (c) journals, e.g., *Journal of Autism and Childhood Schizophrenia*. Furthermore, many diagnostic and treatment protocols derive from etiological classification and speech-language pathologists often operate in terms of a ready-made etiological classification of child language disorders: the mentally retarded, the autistic, the hearing-impaired, the emotionally disturbed and the culturally deprived.

In conclusion, there are basically three approaches to assessment. These include etiological approach, the diagnostic remedial approach and the task analysis approach [2]. Although there are fundamental differences between these approaches, they are not mutually exclusive in terms of use. Most language practitioners use a combination of all three-assessment approaches though they differ in the type of information they provide [5].

Concerning the causes of language disorders, Aram and Nation [1] request the speech-language pathologist to view what the child brings (his intrinsic mechanism) and what the environment provides (his extrinsic conditions) in causal relationship to language processes as a means of interpreting disordered language performance and behaviour.

The term "brain damage" is not a pure diagnostic category because it is the basic cause of all the etiological categories of child language disorders [6]. Discussing the causes of one such category (cerebral palsy), Mysak [13] presented the following under prenatal, natal and postnatal etiological factors: maternal bleeding, blood incompatibilities such as the Rh negative factors, toxæmia, anaesthesia and irradiation, placental and cord disturbances, accidents, embryonal and fetal CNS mal-

formations, precipitate or prolonged delivery; breech or caesarean deliveries; pre-maturity; forceps manipulation and trauma, poisoning (e.g. lead, alcohol), anoxia and neoplasms of the brain and infections such as mumps, rubella, influenza, meningitis, encephalitis, roseola, measles, whooping cough, jaundice, syphilis and respiratory infections.

In a retrospective study over a five year period between 1979-1984 at Komfo Anokye Teaching Hospital (KATH), Kumasi (the same premises and environment as this study) Brobby [3] found measles (30%) to be the most common cause of acquired sensorineural hearing loss (another etiological category) followed by convulsion (19%), hypoxia (9.5%), meningitis (8.5%) mumps (3.5%) and tetanus (2.5%). The remaining 27% due to congenital sensorineural hearing loss was caused by rubella 3%, icterus contracted in the first trimester of pregnancy 1.5% and idiopathy 22.5%.

The purpose of this study was to differentially diagnose verbal language disordered children below age six years and to find out the causes of the etiological categories identified.

MATERIALS AND METHODS

Records of 437 children with an age range of 9 months to 5 years 11 months who reported at KATH, University of Science and Technology (UST) Department of Eye, Ear, Nose, and Throat (EENT), School of Medical Sciences (SMS), with oral language disorders within a three year period (1996-1998) were retrospectively analysed to determine the etiological classification of the children and the causal relationship of their problems.

Etiological Categories

Hearing-impairment: Children in this group failed to respond bilaterally to the stimulus sound from the Noise Stick or the Pediatric Audiometer (PA2) at 60dB Sound Pressure Level (SPL).

Mental Retardation: Grouped here were children with sub-average intellectual functioning including the Down's Syndrome seen at both the

Speech-Language Clinic and the UST Behavioural Sciences Department and found to be fit for special school placement.

Cerebral Palsy: In this group were children with difficulty of motor functioning identified by medical reports and generally on physiotherapy.

Aphasia: Children without the ability to produce and/or comprehend speech for unknown sensory or physical or psychological cause were found here.

Etiologic Factors: They were the factors stated on the clients' medical reports or given by parents or caretakers as being responsible directly or indirectly for the clients' disabilities.

Data analysis was by descriptive statistical methods.

RESULTS

Differential Diagnosis

Majority (46.2%) of the subjects were aphasic children (Table 1) followed by an almost equal number (46.0%) of hearing impaired children. The rest, mentally retarded children (4.6%) and cerebral palsied children (3.0%) were quite few. In terms of those etiological categories, only one child was multiple-handicapped.

Etiological Factors

The language and other associated neurological problems of majority of the children (86.7%) were caused by single factors (Table 2). In 12.1% of the cases, two etiological factors were considered responsible and in 1.1% of the cases, 3 such factors were considered responsible. Between convulsion (19.2%), the most common factor, and measles (12.8%), the second placed common factor, the difference was 6.4%. The above two factors (32.0%), meningitis (7.3%) and jaundice (6.9%), accounted for 46.2% and appeared to be the common factors. The combined effect of the other factors was 33.7% while 20.1% was from unknown sources.

When the above common factors were applied to hearing-impairment alone to find out their fre-

quency of occurrence, convulsion (16.4%) was still the most common factor followed by measles (15.4%), meningitis (12.9%) and jaundice (7.0%). The joint effect of these common factors was 57.7% and that of the other factors was 32.4% while 15.9% represented unknown factors.

DISCUSSION

Etiological Classifications

The etiological approach is concerned with prevention and treatment [5]. "Etiologically, childhood aphasia is a manifestation of dysfunctions in the brain. Hence, the implications for medical treatment and management are of the utmost importance" [12]. The setting for this study was a teaching hospital and interest in prevention and treatment was naturally high on the part of both the clinician and the parents. Besides, the speech language profession has just started in Ghana and informing the public about causation is considered appropriate. In differential diagnosis, the primary concern is to identify the child's more global problem, that is, whether he is deaf, aphasic, emotionally disturbed or mentally retarded [1].

Majority (55%) of the mothers with hearing-impaired children were not aware that their children could not hear; 5% of them broke down in tears when they heard the truth. When asked whether the child could hear or not, some answers provided were: "When he looks at you he can hear" and "When he is facing the other direction and you call him loud, he can hear". Such mothers or caretakers were positive that their children could hear. They never had the slightest idea that their children's language delay was linked to their hearing problems. Milisen [10] has drawn public attention to the fact that the incidence of delayed speech is 100 percent among pre-school deaf children. Ghanaian parents and for that matter, the public need guidance and public education through the media for the detection of hearing difficulty in infants and children. The six recognised hearing assessment centres in Ghana [7] should draw programmes to assess the hearing of infants (from age 7 months old), pre-school and primary school children as is being practised in Kumasi. Where there are no such facilities, the community health nurses should include very simple screen-

ing techniques in their programme and refer failures to the nearest assessment centre.

Majority (over 60%) of the mothers, especially those of aphasic children and others who did not understand their children's problems, approached the clinic with requests for the removal of their children's ankyloglossia or tongue-tie to enable them talk. This structural deviation is frequently mentioned by lay persons but it is seldom a significant factor even in articulation disorders [18]. Milisen [10] indicated too, that a large number of mentally retarded children have delayed speech. The number recorded (4.6%) does not appear to support this view. What really happened was that many of the children brought to the clinic were above age six years and were after assessment for school placement. Since pre-school programmes were not available for the early identified mentally retarded children [8], the speech language clinician initiated programmes for them.

"Cerebral palsy is a common clinical problem in institutions for retarded children" [15]. Why then were they separately identified? The best estimates appear to be that about 50 percent of cerebral palsied children have IQs below 70 (range 30% - 70%) [13], about 25 percent attain IQs in borderline range (70 to 90), and the remainder attain Scores in the normal range or above [14].

Prevention of Causal Factors

Convulsion appeared strongly as the most common etiological factor. According to Brobby [4], if better obstetric management and neonatal care is encouraged and practised, convulsions, hypoxia at birth and neonatal tetanus could be avoided. The question is what about the many convulsion cases that appeared at the postnatal level? Obviously, there is the need for parental and public education about the causes and prevention of convulsion.

Measles was the second common factor. Be reminded that in Brobby's [3] earlier study of acquired sensorineural hearing loss, measles was the most common cause, followed by convulsion. The change could be attributed to the fact that some parents did not know tetanus and described it as convulsion. Brobby [4] asserted that measles, meningitis, mumps, tetanus and rubella could be,

effectively, prevented by cheap readily available and non-toxic immunisation. In Ghana immunisation is carried out effectively and extensively but the diseases continue to be endemic and widespread. With measles, for example, the major problem is the time for the immunisation, which is fixed at 9 months [17]. In the study, the earliest time that measles attacked a child was 1 week after birth. What protects the child during this long pre-immunisation period of 8 months 3 weeks? If the immunisation time is not reduced to as soon as the child is born, then complete prevention of measles and its concomitant problems will not be achieved.

Meningitis attacked 32 children; 26 became deaf, 5 were aphasics and 1 was cerebral palsied. Its effect was very clear because in all cases it was the sole etiological factor. Most of the children were referred from the pediatric department.

Marasmus was variously described, by parents. What was common was the fact that the child abstained from feeding for some time and grew very lean. Conditions like suture problems or swellings in the head were unacceptable. In 90% of the cases, the parents said they obtained herbal treatment for the children. Why most Ghanaian parents believe in the efficacy of local herbal treatment than hospital treatment for marasmus needs investigation. The Department of Scientific Research into Plant Medicine must take over this research. The head injury cases were mostly due to fall, for example, from the back of a mother, from a bridge and from a tricycle, etc. Only proper care and supervision would avert such accidents as falls and burns. The drug cases were, also, mostly due to attempted abortion in the first trimester of pregnancy. Only one case was endorsed by a medical doctor as probably a result of drugs used in treatment. Family planning, moral and sex education need to be intensified to stop abortion attempts.

In other cases, ear pain or ear discharge and unidentified rashes at the upper jaw in front of the external auditory meatus preceding deafness were the sole causes. Anaemic children were usually given blood transfusion. One infant for example bled profusely through the umbilical cord and needed immediate blood replacement. Better in-

fant or childcare would prevent such a condition. Chromosomal investigations on heredity could not be done in Ghana [4]. However, heredity has been indicated as being highly probable and needing further investigation. In two different cases, three siblings were all deaf and no other explanation was evident. Could one have simply ignored such a fact and indicated unknown? Lastly, parents were not informed at the hospitals about the real causes of their children's problems. When the reverse including educating parents is practised by nurses or some other hospital staff, some of the etiological factors can be prevented.

CONCLUSION

The language-disordered children studied were made up of high percentage of aphasic and hearing impaired children and low percentage of mentally retarded and cerebral palsied children. Convulsion, the major causal factor, alongside with neonatal hypoxia and tetanus could be prevented by better obstetric management and neonatal care but post-natal cases also need preventive attention. Measles, the second causal agent, and meningitis, mumps, tetanus and rubella are being prevented by immunisation but they still exist. Adjustment of immunisation time needs attention. The potency in herbal treatment for marasmus must be investigated and adopted for hospital treatment. There should be proper care and supervision of children to prevent accidents, and lastly, family planning, moral and sex education must be intensified to prevent attempted abortion which causes conditions linked with language disorders.

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Table 1: Frequency Distribution of Etiological Categories

Etiological Category	Frequency	Percentage (%)
Aphasia	202	46.2
Hearing Impairment	201	46.0
Mental Retardation	20	4.6
Cerebral Palsy	13	3.0
Hearing Impairment/ Mental Retardation	1	0.2
Total	437	100.0

Etiological Factor (s)	Frequency				Percentage (%)
	Single Factor	Double Factors	Tripple Factors	Total	
Convulsion	75	8.0	0.7	83.7	19.2
Measles	46	10.0	-	56.0	12.8
Meningitis	32	-	-	32.0	7.3
Jaundice	23	6.0	1.0	30.0	6.9
Fever	15	0.5	-	15.5	3.5
Head Injury	11	3.5	0.3	14.8	3.4
Down's Syndrome	13	-	-	13.0	3.0
Marasmus	8	4.0	0.7	12.7	2.9
Caesarean Operation	9	2.5	0.7	12.2	2.8
Prematurity	8	3.5	0.3	11.8	2.7
Hypoxia	8	3.0	0.6	11.6	2.7
Prolonged Delivery	7	4.0	-	11.0	2.5
Anaemia	4	2.5	-	6.5	1.5
Durgs	4	1.5	-	5.5	1.3
Ear-pain or discharge	5	-	-	5.0	1.1
Heredity	4	-	-	4.0	0.9
Mumps	3	0.5	-	3.5	0.8
Maternal Bleeding	2	1.0	0.7	3.7	0.8
Tetanus	3	-	-	3.0	0.7
Boil	1	1.5	-	2.5	0.6
Rashes	2	-	-	2.0	0.5
Cerebral Malaria	2	-	-	2.0	0.5
Encephalitis	2	-	-	2.0	0.5
Burns	2	-	-	2.0	0.5
Vacuum Delivery	1	-	-	1.0	0.2
Chicken Pox	1	-	-	1.0	0.2
Asthma	1	-	-	1.0	0.2
Unknown	88	-	-	88.0	20.1
Total	379	53.0	5.0	437.0	100.1