

PSYCHOLOGICAL DISTRESS IN PERIPHERAL FACIAL PARALYSIS IN CHILDREN. A PILOT STUDY

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ABSTRACT. Facial disfigurement may cause psychological and psychic changes. Peripheral facial paralysis can lead to dysfunctions of the dento-maxillary system and important asymmetries in facial dynamics. The expression of feelings as well as social relations can be disturbed. These trigger factors acting on the developing psyche of a child may cause psychological distress. The pilot study conducted in a group of 10 children with peripheral facial paralysis, with a mean age of 13.4 years, showed that a psychological evaluation within two weeks from the onset of the disease can evidence anxiety phenomena. These changes should be known and treated, ensuring a positive support for the adequate development of the child's psyche and are important factors in the evolution and maintenance of somatic pathology.

Keywords: *psychological distress, facial paralysis, facial palsy, anxiety, depression*

ZUSAMMENFASSUNG. Die Gesichtsentstellungen können psychologische und psychische Änderungen bestimmen. Die Gesichtslähmungen können zu einer dento-maxilarer Aparatusdysfunktion führen und zu wichtigen Asymmetrien in der Gesichtsdynamik. Die Gefuhlsausserung aber auch die gesellschaftliche Beziehungen können geschadigt werden. Diese Trigger Faktoren beeinflussen die Psyche im Laufe der Entwicklung eines Kindes können ein psychologischer Dystress bestimmen. Die Pilotstudie für 10 Kinder mit peripherischer Gesichtslähmung im Alter von 13,4 zeigt, dass in den ersten 2 Wochen der Studie kann man Angstgefühle bemerken. Diese Veränderungen muss man wissen und die Kindes Psyche positiv stützen.

Schlüsselwörter: *psychische Belastung, Fazialisparese, Gesichtslähmung, Angst, Depression*

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Introduction

The facies plays an important role in interpersonal and social relations, and temporary or long lasting facial disfigurement may have an impact on the patient's psyche. Studies performed in adult patients with facial disfigurement in the region of the head and neck after oncological surgery (Callahan C., Facial disfigurement and sense of self in head and neck cancer. *Soc Work Health Care*, 2004), burns (White A.C., Psychiatric study of patients with severe burn injuries. *BMJ*, Clinical Research ed., 1982), or with Graves' ophthalmopathy (Farid M., Roch-Levecq A.C., Levi L., Brody B.L., Granet D.B., Kikawa D.O., Psychological disturbance in graves ophthalmology. *Arch Ophthalmol*, 2006) have shown that there is no linear relationship between the degree of facial involvement and the patient's subjective distress. Adults experience different distress manifestations than children, in whom the psyche is in the process of developing and maturation.

The young school age child (7-11 years) has a global perception, which does not include intermediate aspects, but most frequently only aspects that create great contrasts. In the majority of the children of this age group, the idea of invariance is found, i.e. the tendency to preserve quantities, lengths, even if objects undergo objective physical changes. Thinking is focused on concrete operations, being connected to objectual support (Iftene, F., 1999). Maximal emotional strain is found around the age of 9 years, when "the 9-year-old's anguish" may occur, the child being overwhelmed by the multitude of information that requires adaptive efforts. In the middle school age child (11-14 years), formal thinking develops, with hypothetico-deductive reasoning, with the capacity to evaluate alternatives (Iftene, F., 1999). Around the age of 12 years, the originality crisis with affective bursts occurs, which is also called the "puberty crisis". During this period, the perception of complex schemes and structures, with a critical attitude towards the information received, is possible. This is a stage in which imagination has periods of daydreaming, interests and passions begin to take shape, aesthetic feelings develop and moral conscience is formed. In adolescence (after the age of 15 years), a separation process occurs, personality and sexuality are completed, but this is also a period of immaturity in judgment, with acts of bravery (Iftene, F., 1999).

Given that the child's psyche undergoes several stages until maturation, any external factor depending on its intensity and duration of action can be a trigger factor for the disturbance of harmonious psychosomatic development. These trigger factors include facial disfigurement. Peripheral facial palsy and paralysis may cause static and dynamic alterations of the facies. In the paralyzed hemiface, muscular hypotonia with the disappearance of facial sulci and the descent of the eyebrow are seen, the eye is wide open, the labial commissure drops and is displaced towards the healthy contralateral side (Pendefunda, G.,

Pendefunda, L., 1998). These changes become more pronounced during facial dynamics, when the patient fails to close the palpebral fissure, during smiling the facies is distorted through the displacement of the affected mouth corner towards the healthy side, saliva leaks from the oral cavity, mastication is difficult, and the pronunciation of the labial phonemes “m”, “b”, “p” is inadequate (see Figure 1). In children, the most frequent form of facial paralysis is the idiopathic one, also called Bell’s palsy or paralysis “a frigore”. The cause of Bell’s palsy is unknown and this diagnosis is made after the exclusion of various etiological factors: traumatic, infectious, metabolic, tumoral, neurological diseases, etc (Dawidjan B., Idiopathic Facial Paralysis: A Review and Case Study. *The Journal of Dental Hygiene*, 2001). However, cold exposure and the reactivation of herpes simplex virus 1 (HSV-1) infection are incriminated in the etiopathogeny of Bell’s palsy. The onset of the disease is sudden, possibly after acute rhinopharyngitis, being preceded by pain in the retroauricular region. The evolution of the disease is usually favorable in 80-85% of the patients under non-steroidal or steroidal antiinflammatory, neurotrophic and physiokinesitherapeutic treatment (Schirm J., Mulkens P.S., Bell’s palsy and herpes simplex virus. *APMIS*, 1997). The mean evolution of the disease is 6 weeks, but in some patients functional deficit recovery occurs only after 6 months. About 15-20% of patients do not adequately respond to treatment and will not recover the lost function (sometimes they will recover it partially). These patients will require interventions for the surgical restoration of the function of the facial nerve that may correspond or not to the patients’ expectancies in spite of satisfactory functional recovery (Bradbury E.T., Simons W., Sanders R., Psychological and social factors in reconstructive surgery for hemi-facial palsy. *J Plastic Reconstr Aesth Surg*, 2006). These patients must cope with social reinsertion and social stigma problems.



Fig. 1. Right peripheral facial paresis, third degree according to House-Brackmann scale. Displacement of the mouth corner towards the healthy left side during smiling

Facial disfigurement (like that seen in peripheral facial paralysis) may cause psychological or psychic changes such as anxiety, maladaptive behavior, reduction of the emotional wellbeing state or depression (Anderson G., Anxiety, optimism, and symptoms reporting following surgery for acoustic neuroma. *J Psychosom Res*, 1999; Van Swearingen J.M., Cohn J., Turnbull J., Mirzai T., Johnson P., Psychological distress: linking impairment with disability in facial neuromotor disorders. *Otolaryngol Head Neck Surg*, 1998). For these changes to occur, the

patient should have a representation of the disease, the coping and evaluation of the disease. The following 5 items are relevant for the representation of the disease: cause of the disease, curability of the disease, chronology (evolution) of the disease, consequences of the disease on the patient's quality of life, and identity (whether the patient believes that symptoms belong to the disease in cause) (Leventhal H., Benyamini Y., Brownlee S., Diefenbach M., Leventhal E.A., Patrick-Miller L. et al., 1997).

When this facial asymmetry associated with functional disorders (as found in facial paralysis) occurs in a child, the question arises whether this disease induces psychological disorders, if it affects the psychosomatic development of the child and to what extent the child is capable of understanding the representation of the disease.

The aim of this pilot study is to determine whether peripheral facial paralysis in children can induce early anxiety or depression reactions.

Material and method

The pilot study was performed in 10 children (who meet ages inclusion criteria and whose questionnaires were correct filled) with peripheral facial paralysis (PFP) hospitalized at the Clinic of Pediatric Neurology Cluj-Napoca. The grade of facial paralysis was evaluated using the House-Brackmann scale (House J.W., Brackmann D.E., Facial nerve grading system. *Otolaryngol Head Neck Surg*, 1985), as shown in Table 1. Each 0.25 cm displacement of the mouth corner towards the healthy side is scored one point. The maximal score can be 4 for a 1 cm displacement of the mouth corner. Likewise, one point is given for a 0.25 cm descent of the eyebrow, with a maximum of 1 cm. Through the sum of the two parameters, depending on functional deficit, 6 grades can be obtained, of which grade I is normal.

Table 1. House-Brackmann scale

Grade	Description	Score	Function %
I	Normal	8/8	100
II	Mild	7/8	76-99
III	Moderate	5/8 - 6/8	51-75
IV	Moderate-severe	3/8 - 4/8	26-50
V	Severe	1/8 - 2/8	1-25
VI	Total	0/8	0

To assess the presence of symptoms consistent with anxiety or depression were completed the Multidimensional Anxiety Scale for Children (MASC) (March, J.S., 2010) and the Children's Depression Inventory (CDI) (Kovacs, M., 2012).

For the determination of the validity of MASC data, the Inconsistency Index was evaluated. Values higher than or equal to 12 (for children aged 8-11 years) and higher than or equal to 10 (for children aged 12-19 years) were considered as inconsistent. The global level of anxious symptomatology was determined by evaluating the Anxiety Disorder Index. Scores greater than 65 advocates for the presence of anxiety disorders. Also, it was assessed whether there was a pattern suggesting a specific anxiety disorder, as shown in Table 2.

Table 2. Factors evaluated using MASC

MASC scales, subscales and indices	
1. Physical Symptom Scale	Tension Subscale
	Somatic Symptom Subscale
2. Harm Avoidance Scale	Perfectionism Subscale
	Anxious Coping Subscale
3. Social Anxiety Scale	Humiliation Fear Subscale
	Performance Fear Subscale
4. Separation/Panic Scale	
5. Total Anxiety Scale	
6. Anxiety Disorder Index	
7. Inconsistency Index	

T scores were interpreted according to Table 3. T score is a standard score that provides the same mean and standard deviation for each scale, allowing for a direct comparison of the scores of the different scales.

Table 3. Rules for the interpretation of T scores for MASC

Range	Rule
Higher than 70	Very significantly above the mean
66-70	Significantly above the mean
61-65	Above the mean
56-60	Slightly above the mean
45-55	Mean
40-44	Slightly below the mean
35-39	Below the mean
30-34	Significantly below the mean
Lower than 30	Very significantly below the mean

MASC information was correlated with the results of the Children’s Depression Inventory (CDI) (Kovacs, M., 2012). The factor scales for the self-evaluation version are: Negative Mood, Interpersonal Problems, Inefficiency, Anhedonia and Low Self-Esteem. T scores higher than 65 are considered clinically significant if the minor child is part of a risk group. T scores of CDI as well as MASC were interpreted in the same way.

The questionnaires were applied in a quiet environment, in the presence of a parent. The patients were informed that there were no right or wrong answers. The legal tutors of the children gave their written informed consent for the participation of the minors in the study.

Results

Of 15 patients with peripheral facial paralysis that were admitted to the Clinic of Pediatric Neurology Cluj-Napoca in the period May 2012 - March 2013, the MASC and CDI questionnaires could only be applied to 11 patients, because 4 children were aged less than 5 years. In the case of one patient, the questionnaires were incomplete and the patient was excluded from the study, so the questionnaires of 10 subjects were valid. The mean age of the patients was 13.4 years, with the following subgroups: young school age – 1 child, middle school age – 5 children, adolescents – 4 children. 60% of the group subjects were girls and 40% were boys. 60% of the subjects had grade II PFP, 10% had grade III, 20% grade IV, and 10% grade V PFP. PFP was predominantly located in the left side (in 60% of the subjects). The results of the MASC and CDI questionnaires are presented in Tables 4 and 5. Patient no. 3 had an Inconsistency Index equal to 12, which shows that the answers to the MASC questionnaire were inconsistent. The other patients provided no inconsistent answers.

Table 4. Results for the MASC scale in the study group

No	Age/ years	Sex/ HB	Physical symptoms			Harm avoidance			Social anxiety			S/P	Total anxiety	ADI
			T/W	S/V	TS	P	AC	TS	H/R	PF	TS			
1	10	F/II	62	51	57	65	71	71	64	48	58	56	64	63
2	11	F/IV	59	65	63	54	61	58	55	65	51	61	64	66
3	12	F/II	64	53	58	64	58	62	67	69	69	60	68	67
4	12	M/II	42	54	46	62	54	59	51	62	57	51	54	48
5	12	M/II	49	37	42	66	47	57	39	44	40	54	46	48
6	14	F/V	43	39	40	51	58	56	39	37	37	34	38	42
7	15	M/II	45	41	42	58	50	55	45	53	48	46	46	43
8	15	F/II	84	70	79	60	61	62	64	49	59	67	74	77
9	16	M/III	49	34	40	39	50	45	51	46	47	51	34	43
10	17	F/IV	55	46	51	57	68	65	38	42	38	46	49	15

HB=Grade of facial paralysis according to House-Brackmann scale; **T/W**=Tension/Worry; **S/V**=Somatic/Vegetative; **TS**=Total Score; **P**=Perfectionism; **AC**=Anxious Coping; **H/R**=Humiliation/Rejection; **PF**=Performance Fear; **S/P**=Separation/Panic; **ADI**= Anxiety Disorder Index

Table 5. Results for the CDI scale in the study group

No	Age/ years	Sex/ HB	Total CDI score	Negative mood	Interpersonal problems	Ineffi- ciency	Anhedo- nia	Low self- esteem
1	10	F/II	51	54	56	47	50	51
2	11	F/IV	40	40	45	41	42	46
3	12	F/II	47	50	56	52	42	46
4	12	M/II	38	38	42	44	41	40
5	12	M/II	42	38	42	44	48	46
6	14	F/V	44	54	43	38	45	45
7	15	M/II	42	39	44	53	44	40
8	15	F/II	46	48	43	38	52	45
9	16	M/III	42	44	44	38	48	45
10	17	F/IV	58	64	64	59	45	58

Discussion

The results obtained should be interpreted in the context of the immature psyche of the child and of the time of evaluation. All children were hospitalized in the Clinic of Pediatric Neurology, they were under treatment, the evolution of the disease was favorable for all patients (but at different stages), and their pathology was less dramatic compared to that of the other hospitalized children, such as those with cerebral palsy. The mean hospitalization duration was approximately 2 weeks. Also, the patients had no contact with their social environment, which is why they had no feedback from their entourage. Facial myogymnastics under visual self-control, in the front of the mirror, allows the child to observe facial asymmetry, as well as to have positive feedback due to the small improvements achieved. The acute onset of PFP in adult patient causes anxiety disorders and if organic disease persists, depression specific symptoms can also be evidenced (Bradbury E.T., Simons W., Sanders R., Psychological and social factors in reconstructive surgery for hemi-facial palsy. *J Plastic Reconstr Aesth Surg*, 2006). In our study, only 3 patients had an Anxiety Disorder Index higher than 65, but subject 3 provided inconsistent answers (possibly because of the “puberty crisis”, bravado behavior and the wish to distort reality). Patient with a score 77 of Index Anxiety Disorder suffered from epilepsy with generalized seizures and was under treatment antiepileptic. This chronic epileptic disorder could explain such a high value of Index Anxiety Disorder. One of the children had an Anxiety Disorder Index above the mean, 2 children had values in the mean range, and the rest of 4 had below the mean values. It could not be determined whether the changes in items with high scores of the MASC questionnaire were present prior to the onset of PFP.

The evaluation of the results of the CDI questionnaire showed that no patient had depression symptoms, which can be explained by the short evolution of the disease until the time of testing. However, this testing allowed to exclude the cases with depression developed prior to PFP onset. The children should be recalled at 6, 9 and 12 months for the reapplication of the CDI questionnaire. On the CDI questionnaire, 4 subjects had a mean level of negative mood and 3 children had above the mean levels of interpersonal problems. In contrast, more than half of the subjects had mean anhedonia levels and 70% had mean self-esteem levels. It is possible, under the conditions of the partial recovery of the lost function and without adequate psychological support, that the children might develop depressive disorders. By correlating the results of the MASC and CDI questionnaires, it can be seen that the patient with the highest total CDI score (58), with Negative Mood (64) and Interpersonal Problems (64) also had Anxious Coping (68). There were no correlations between the PFP grade and the MASC or CDI indices.

In future studies, the subjects should be re-evaluated using both the MASC and CDI questionnaires for tracking symptoms of anxiety and depression. In order to observe the way of representation of the disease for children in various age groups, the application of a questionnaire assessing the “identity” aspects of the disease should have been necessary.

Also, a study performed in a larger group of patients, even a multicenter study would be required given the low prevalence of the disease. Children with problems evidenced by the applied questionnaires, even if showing only subscale changes, will also have to be evaluated by psychiatric clinical examination.

Conclusions

Peripheral facial paralysis in children may cause anxiety disorders at all or some subscale levels. A psychological evaluation within two weeks from the onset of the disease can evidence anxiety phenomena. It is important to detect these aspects as early as possible and to treat them in order to avoid the development of pathological anxiety, major depression or dysthymia.

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