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**Summary of presentation**  
**identification of very early signs of autism:**  
**clinical and study perspectives\***

**Introduction**

For many years, when parents of children with autism were asked when they first noticed that something was irregular in their child's development, they would answer in one of two versions: first was, "our child developed normally until the age of one year and then the regression began" and second, mostly of mothers, "I felt from the very beginning that something was not right with my child but everyone said that I was a hysterical mother..."

**Aim of the Study**

We asked ourselves what happens at around the age of one. In 1997 we started to ask parents if they had video tapes of their infants' first year, to explore the cutoff point; if and when regression had started.

**Methods**

A retrospective study conducted at the Mifne Center in Israel, from 1997 until 2007, examined 110 infants who were diagnosed with autism between the age of

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2–3 years, using retrospective analysis of video-recordings of their first year of lives, made by their parents before any suspicion concerning the infant's development arose.

84 boys (76.4%) and 26 (23.6%) girls participated in this study were presented in the videos between the ages of 5–15 months.

Since all the toddlers in this group were diagnosed with autism between the ages 2–3, their first year of life was analyzed as a self-control group. The 110 videos of the 110 infants served as the data for a retrospective clinical research that continued for ten years.

In addition to the videos analyses, questionnaires were distributed to the parents, when the children were already between the ages of 2–3 years and after having completed the diagnosis stage.

The variables investigated in this study were development characteristics associated with the autism spectrum, and were measured according to parameters of time and frequency of the phenomenon.

### Primary Findings

1. Eye contact – Lack of eye contact or very low eye contact was found in 77.3% of the babies. Lack of eye contact is one of the obvious characteristics of autism. The question is whether this deficient eye contact is the result of a deficiency in making contact, or if the lack of eye contact restricts making contact, since from the beginning of the infant's development it probably creates a different perception.  
From the very beginning, human infants are acutely sensitive to social stimuli, especially faces, and from 3 to 5 months their gaze and affective behaviour reflect increased sensitivity to their partner's slight deviations in gaze and facial expressions (Symons et al., 1998; Striano & Stahl, 2005). Responses to eye gaze may help characterize developmental processes that lead to later emerging autism (Elsabbagh et al. 2012).
2. Lack of reaction to the presence/voice of parents – (especially calling of their name) was observed in 44.5% of the infants. No direct evidence has yet been presented for the involvement of brainstem projections in the social engagement of humans, particularly of human infants. Early brainstem dysfunction detected during its major maturational spurt in the late prenatal period may directly affect the modulation of gaze as a function of arousal to social stimuli, thereby compromising social engagement (Geva, et al., 2011).
3. Excessive-passivity – appeared in 44.5%. Analytic observation of this development components pointed of lack of regulation.

Brainstem systems play an integral role in these higher level capacities such as self-regulation. Certain brainstem functions first emerge around 30–33 weeks' gestation, a period at which many premature births occur (Jiang et al., 2009). This period is a critical one for major developmental changes in the equilibrium and the auditory pathways in the brainstem.

4. Motor development delay – appeared in 33.6% of the infants. Movement disturbances play an important part in the phenomenon of autism and can be used to diagnose the presence of autism in the first few months of life (Teitelbaum et al., 1998).
5. Excessive-activity – including repetitive behaviors appeared in 28.2% of the babies. Brainstem injury has been found to disrupt physiological regulation and homeostasis. These disruptions may impact the autonomic nervous system (Karlsson et al., 2005).
6. Refusal to eat – or rejection appeared in 20.9% of the infants. Abnormalities in eating habits are listed as associated features of the autism disorder (Wing, 1987). Brainstem may also affect circadian regulation, as well as visceral homeostasis modulation of internal states, such as hunger and thirst (Batterham et al., 2007).
7. Accelerated growth of head circumference was found in 12.7% of the infants. According to the studies of Courchesne et al. (2011) head circumference overgrowth in infants with autism involved an abnormal excess number of neurons in the Frontal Cortex. Cortical defects have a prenatal origin, proving that autism may begin during pregnancy.
8. Aversion to touch – was found in 10.0% of the infants. Physical touch relates to the amount of mass and physical proximity that the infant allows (Carvill, 2001.)

A lack of integration among the systems, causes difficulties in sensory modulation (Dunn & Westman, 1995). (Lack of sensory modulation may create confusion and anxiety. In order to overcome this state the infant holds on to fixated habits that may help him to decrease his anxiety (Alonim, 2004; 2011).

Of the 110 infants: 6 infants were diagnosed with pathologies: 3 neurological; 1 Angelman; 1 Rett; 1 metabolic problem; 6 infants showed no signs of a developmental disorder of any kind during their first year of life, and according to their parents' report regression set in between the age of twelve to eighteen months; 98 of the infants showed early signs related to autism between 5 to 15 months.