

# The Perinatal Application of Oxytocin and Its Possible Influence on the Human Psyche

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**Abstract:** Oxytocin is a body-own hormone which is released in the posterior pituitary gland and controls a number of bodily functions. However, since the 90ies, its psychoactive component is being investigated and is becoming very meaningful in diagnosis and therapy of both Psychiatry and Psychology. Since the 60's Oxytocin is used in Gynaecology to induce labour. This contribution has emerged from over a decade of working with new-born babies. In this contribution, the thesis is set up that the use of Oxytocin under birth can have consequences on the psyche of the child, for the important time after the birth and in addition for the remainder of life. Its use should therefore be strictly carefully considered. As an example, in the USA almost 80% where the application could be consequential in social importance. Through the course of the years, the author has set up a treatment for the concerned children and adults, and consequently clarifies its principles.

**Keywords:** oxytocin, perinatal period, hormonal imprinting, oxytocin receptor downregulation, isopathic treatment

## The Chemistry of Oxytocin

Oxytocin was discovered by Sir Henry Dale in 1906. He found that extracts of the posterior pituitary gland could produce a stimulating effect on the uterus. A few years later the new substance, now called "Pituitrin" was administered to women to prevent a postpartum haemorrhage. (Mitchell BF, 2001). The nonapeptide Oxytocin was isolated and synthesised for the first time by the US Chemist Vincent du Vigneaud (Du Vigneaud V, 1953). It was the first ever Neuropeptide to be decoded and artificially re-produced again. In 1955 he even received the Nobel Prize for his research. Already in year 1960, Oxytocin was available on the pharmaceutical market, as it was now well known that the hormone could trigger contractions of the uterus. Likewise, it was known that it encouraged lactation. It's name is translated directly from the Greek language, and literally means 'fast birth' (Dale H H, 1906). In 1984 its genetic sequence was decoded (Ivell R, Richter D, 1984). It is formed in the paraventricular and supraoptic nucleus of the hypothalamus in form of magnocellular neurons (Brownstein M J, 1980; Buijs R M, 1985). They are capable of immediately modulating the production of the hormone quantity in the plasma through its measurement (Leng G, 1999). Yet not only through the direct secretion out of the posterior pituitary, does it take an important position. Also connections within the anterior pituitary gland give the hormone a driving function in the endocrine household of the body. Above all the influence on the production of Prolactin and ATCH are explored (Samson WK, 1995) In the synthesis of oxytocin several other forms are produced, with extra amino acids

attached to one end. These 'prohormones' are collectively known as Oxytocin-X, and have been found in the peripheral circulation of women. Oxytocin-X may occupy the receptor site of oxytocin, effectively blocking the effect of the hormone (Mitchell BF, 2001). The immature form of oxytocin, Oxytocin-X, is also detectable in the blood of the newborn, with levels higher than oxytocin itself. Oxytocin-X levels are higher in the newborn umbilical vein than artery and this ratio increases after labor. This suggests that, unlike oxytocin which is produced by the fetus, Oxytocin-X may be produced in the laboring mother's uterus and may be involved in the processes of labor (Mueller-Heubach E, 1995). Postnatally, the newborn produces increasing amounts of mature oxytocin. For example, in fetal rats at term, virtually no mature oxytocin is produced, but by day seven postnatal, more than 50% of oxytocin is in its mature form (Mueller-Heubach E, 1995). Higher ratios of Oxytocin-X to Oxytocin have been found in autism. Oxytocin has a short half-life in the blood, making its direct effects transient. Oxytocin's half-life has been variously estimated as three and a half minutes (Fuchs AR, 1984), 10 to 12 minutes (Arias F, 2000) and 15 minutes (Gonser M, 1995). It is supposed that all vertebrates possess an Oxytocin (and Vasopressin) equivalent, which therefore would mean that Oxytocin is around 500 million years old (Acher R, 1995). Through stimulations such as sucking, sexuality (Anderson H M, 1994; Arigolas A, 1992; Arletti R, 1985), birth (Alexandrowa M., 1980) and different types of positive and negative stress, the nonapeptide is carried into the body circulation through the posterior pituitary gland. Its secretion is also dependent on other hormones, such as those of the thyroid (Adan RA, 1992). Equally, in the central nervous system, there are a row of oxytocinergic neurons which project in to many various regions (Barberis C, 1996; Elands J, 1988). Since it is well known that Oxytocin is found in important parts of the autonomous and limbic system, it is used as a neurotransmitter and neuromodulatory affect in controlling the CNS (Loup F, 1989; Sawchenko PE, 1985). Interesting also is the discovery that Oxytocin bonding sites were found in the spinal-cord of both new born and adult rats between C8 and L2 (Horseman MK, 1994). Shortly, it is also known that Oxytocin can be formed in peripheral structures. (Uterus, placenta, Amnion, Corpus luteum and also the heart). Likewise it seems to play a large part in the masculine sexuality. Through animal testing, Oxytocin was found in the Testes, the Epididymis and the Prostate. It seems to have a function in the ejaculation, which in some mammals, changes the contractility in the tubuli seminiferi (island TR, Young L, 1997). Oxytocin injections were able to release erections in animals (Melis MR, 1986). It was even found in the cerebral spinal fluid (Amico YES, 1983). Oxytocin also modulates our experience of pain (Arletti R, Benelli A, 1993). Memory and mood are also influenced through the release of this hormone (Arletti R, Benelli A, Poggioli R, 1995), as is the modulation of the autonomous nervous system (Armour YES, 1990). Oxytocin has an important role in digestion and nutrient absorption. Oxytocin release activates the vagal nerve, which increases activity of the gut hormones. Higher levels of hormones such as cholecystokinin and gastrin lead to growth of the gastrointestinal tract, giving a larger surface area for, and therefore more efficient, nutrient absorption. (Uvnas-Moberg K, 1989; Uvnas-Moberg K, 2003). Oxytocin actions also promote anabolic metabolism, which prioritizes growth rather than 'catabolic' break-down.

For example oxytocin release leads to insulin elevation (Uvnas-Moberg K, 1989; Uvnas-Moberg K, 2003) which promotes cellular uptake of glucose and other nutrients. All of these effects are obviously beneficial in optimizing the nutritional state of pregnant and breastfeeding females. The receptor for the Oxytocin is tied to Phospholipase C. Its genetic sequence was decoded in 1992 (Kimura T; et al, 1992). For the hormone to bond, Magnesium (Pliska V, 1991) and Cholesterol (Gimpl G, 2000) are necessary. Its activation is dependent (Coirini H, 1991; Dawood MY, 1986) on steroid hormones. For example, Oestrogens (Caldwell JD, Walker, 1994). Through these a modulation of the Oxytocin receptors and also the Oxytocin itself could be verified. Bearing in mind that the oxytonergic system is very old (see above) and that it exercises a central function in the reproduction, investigating the interaction with sexual steroids will play a huge role in the research of reproduction control (Ivell R, and Walther N, 1999). (The author believes that this also applies to the interaction between the similar oestrogen substances found in plastic within our environment.) Oxytocin receptors are found in both the brain and the periphery (Adan RA; Van Leeuwen, 1995). Interestingly enough, this also applies to the heart. It is modulated through the Oxytocin and the receptors formed here. (Jankowski M, 1998). Both these were researched and found in the vascular system of a rat. (Jankowski M, Wang D, 2000). Even on Osteoblasts, functional receptors for Oxytocin were found (Copland YES, 1999). With increasing age, we seem to lose the possibilities of bonding Oxytocin to its receptors (Arsenijevic Y, 1995).

### **Perinatal Function of Oxytocin**

At the beginning of the 90's Benedetto (Benedetto MT, 1990) observed, during births under influence of Oxytocin, the changing Oxytocin receptors in the fetal membranes. They showed that at the beginning stage of birth and with the advancing stages there was a significant rise in the number of receptors. This seems to point out the important role that the Oxytocin has at the beginning of labour. Chibbar et al (Chibbar R, 1993), also proved the importance of this hormone. They found altered Oxytocin quantity in amnion, Chorion and Decidua before the birth. What role Oxytocin plays within birth control was also shown by Fuchs et al (Fuchs AR, 1982). Even paracrine characteristics were attested that control the flow of the birth (Mitchell BF, 1998). Also, it was shown that the journey from the sexual stimulations to the role of being a parent, Oxytocin played a key role (Insel TR, Young L, and Wang Z, 1997). If one injects this hormone into a sheep's ventricle oxytocin, immediately a motherly behaviour is noticed towards little lambs (Kendrick KM, Keverne EB, 1987). For the lactation, it was proven on cows that increased Oxytocin levels were necessary for milk production (Bruckmaier RM, 1994). The human physiology of Lactation was intensively researched through the act of suckling (McNeilly ACE, 1983). During the hour or so after birth, when bleeding is most likely, oxytocin levels are elevated in healthy mothers who have given birth vaginally and are skin to skin with their babies (Nissen E, 1995). Kennell and McGrath note, "Before the availability of medications such as Pitocin, the newborn's touches were probably crucial for the survival of mothers by raising oxytocin levels to cause strong, repeated uterine contractions, which

prevented a fatal hemorrhage.” (Kennell JH, 2001). Also proven was the meaningful importance of a good bonding between mother and child, directly after birth (Kendrick KM, 2000). The significance of postnatal stress for the processing of stress in later life was investigated by Henry et al. (Henry JP, 1998). They showed the critical importance of gonad steroids and Oxytocin for humans in order to connect to each other. If it comes to a stress full loss of control, the Catecholamines and the “fight and flight” mechanism dominate the control in our behavioural strategies. Several studies on the impact of epidurals (which reduce the maternal oxytocin peak at birth) correlate this intervention with deficits in maternal-infant attachment in both humans (Murray AD 1981; Sepkoski CM, 1992) and sheep (Krehbiel D, 1987). For ewes, the deficit in maternal-infant attachment was improved with oxytocin injected into the brain (Levy F, 1992). Interferences within the early child-like bonding can accordingly have a dissociational effect and can result in disturbances within the processes in our right hemisphere. A malfunction can result in person needing permanent self-preservation. This is typical for the personality Type A which one talks of in Cardiology. Michel Odent, a gynaecologist and important advocate of a natural birth designated the meaning of Oxytocin as the: “roots of the love”. This is also the title of his latest book. In 2007 in Israel, Dr. Ruth Feldman proved that oxytocin takes over the main role in the emergence of behavioural and mental representations, which are typical for the human bonding. The levels of oxytocin after the birth were able to be assigned to form of eye contact, vocalisation, positive effects, caring contact, specific bonding thoughts and frequent reviewing of the children (Feldman R, 2007). Also, after the birth of voles, the effect of additional applicated Oxytocin can give us further insights into postnatal activity. Significant differences in the level of applicated oxytocin and the rate, at which the children would show motherly behaviour, in later life towards the next generation, were found (Bales K, 2007). The higher the original dose of oxytocin was, the higher the likelihood was that the females, as fully grown animals, would care for the cubs even if they were not of the same family. In 2005, Doctor Alison Wismer Fries (Wismer Fries A, 2005) examined the impacts of early childhood experiences compared to later, social behaviour in which she took two groups of children and examined each of their urine on Oxytocin and Vasopressin. The one group consisted of children that had, since their birth, been brought up by their biological parents and the other of children that had grown up in orphanages in Rumania and Russia. It appeared that after coming in contact with their mothers, the biological children’s level of oxytocin increased. In the orphans, the level stayed constant. This could be the neuroendocrinal basis on which some adopted children, especially those with depriving experiences, have difficulties establishing safe relationships even if they live in loving families. In Germany oxytocin is currently used at birth in four indications: to this count, the prenatal artificial provocation of labour, the labour augmentation under birth (which seems to have the principal effect on the psychic of a person), the admission after a sectio, and the admission of Oxytocin to accelerate placenta relief. The application is usually intravenous, but a spray is also available and currently used in many cases. All dosage types potentially have an influence on mother and child, whereby the last two mentioned seem to only influence the nursing of a baby.

### **Psychoactive Components of Oxytocin**

After the physiological effects of the Oxytocin were investigated in the 60s, the effect it has on our nervous system was then subject of the research in the 90s. It therefore seems that Oxytocin plays a key roll in the stress response of the body. It was discovered that under stress, more mRNA from Oxytocin, and also an increase in production of magnocellular neurons of the nucleus Paraventriculus (not the N. Supraopticus) was present (Jezova D, 1995). Seeing as Oxytocin is released during both positive and negative events, the question is if Oxytocin can also cause different reactions within the body (Carter, C S, 1998). A positive effect the hormone has on the memory was assessed (Boccia MM, 1998). A pain modulating effect could be proven (Boccia MM, 1998). A positive effect on the cognitive abilities of the nervous system was also investigated (Bruins J, 1992). It also has an anxiolytical effect on mammals. Anxiety behaviour, when under stress was reduced in animal testing due to use of Oxytocin (McCarthy MM, 1997). Oxytocin also seems to modify the addictive behaviour (Sarnyai Z, 1994). This was proved by Opiat and Cocaine abuse (Kovacs GL, 1998). In some cases an extreme compulsive behaviour (Obsessive compulsive disorder) was ascribed in a dysfunction in the balance of oxytocin (Leckman JF, 1994). Blocking the Oxytocin receptors causes an impending effect on the sexuality (Caldwell JD, 1994). For many authors, it seems to play a central role in the sexuality (Murphy MR, 1987). Oxytocin levels are also increased under sexual actions (Carmichael M S, 1987). If an Oxytocin receptor is blocked, it has an impeding influence on the sexuality (Caldwell JD, 1994). For many authors, it seems to play a central roll in sexuality (Murphy MR, 1987). Also the behaviour of being faithful seems to be dependent on Oxytocin. Through this, Carter (Carter CS, 1995) was able to prove that voles, that had the highest amount of Oxytocin receptors, tended to be faithful all life long. This breed of animal was also tested by Cho, researching the differences in Oxytocin receptors. Tom Insel (Insel TR, 1995) injected voles with Oxytocin, and was able to increase their faithfulness, but when the Oxytocin receptors were blocked there was no sign of bonding with the partner at all. This effect was made to use in America in 2006, when they put on the market a Nasal spray containing Oxytocin. 'Liquid Trust', (or Instant Trust, Instant Openness, etc.) as it is known, is an offered Nasal spray which after its use, promises higher success rates in seduction. However, this discovery and its insights led many researchers to the contrary conclusion; one tries to prevent a bond to a sexual partner through blocking the Oxytocin receptors. Through this, sexual contact with a potential partner could result without the "troublesome" emotional tie (Tierney J, 2009). However, this hormone can do even more than that. In the 90's, the british Richard Windle showed that after the admission of this hormone, stress and anxiety were diminished within rats (Windle R, 1997). Baumgartner and Heinrichs (Baumgartner T, Heinrichs M, 2008) were also able to prove this in humans, when they were able to assess a significant rise in confidence after the application of Oxytocin. The experiments showed that after the Oxytocin application, the inclination of the probate to take social risks, increased. In the neuron chemical research, Oxytocin in humans becomes coherent with psychic conditions like love, confidence and peacefulness. These assumptions are based on experiments, like those of Michael Kosfeld, University of Zurich. Kosfeld let probates conduct an investor game winning real

money, whereby one part of the group received a dosage of Oxytocin nasal spray which increased the level in their bodies. It appeared that, the group which had a higher Oxytocin level, showed more trust within their fellow players. Kosfeld and Heinrichs (Kosfeld M; Heinrichs M, 2005) were later able to show that Oxytocin also reduces anxiety and has a stress reducing effect, which evokes social support. Within mammals, this hormone is responsible for the control of social behaviour, motherly care (Fahrbach SE, 1985) and the ability to bond. This should all be transferable on humans. Island and Winslow et al., (Island TR, Winslow JT, 1998) created a neuro endocrine basis for couples to bond on the basis of the Oxytocin receptors. The higher the amount, the more likely it is that one will bond to his or her partner. In a further study, they created a neuro endocrine basis for monogamy (island TR, Winslow JT, Wang ZX, Young L, 1998). Walter (Walter H, 2003) postulated that the release of Oxytocin would not only be beneficial for the mother when nursing, but would also release feelings of happiness. This is said to be elementary for the bond between the mother and her child. How important this phase of bonding, directly after the birth is, on our behaviour in later life was shown by Bowlby (Bowlby J, 2005) in his studies. He subdivided four different types of bonding, from firm until unstable, dependent on the early experiences the baby had after the birth. The team of Beate Ditzen investigated the influence of Oxytocin, by requesting spouses to start a discussion about a subject they frequently argue about. The results of the study suggest that Neuropeptides have a calming and de-escalating effect. The significance was proved in 1998 in which the mediation of positive interactions and emotions was enhanced through Oxytocin. Not only through somatic sensory attraction, like produced when nursing, but also through contact and warm temperatures this can be released. Consequences are, that own body opiates are formed, the production of cortisol decreases, insulin increases, blood pressure sinks etc. As it seems to also be beneficial for metaphorical language, its positive influence is emphasised in hypnosis and meditation. The investigated could also be an explanatory model for so called alternative healing methods (Uvnas MK, 1998). Equally the recognising of faces, which is crucial for our social communication, seems to be dependent on Oxytocin (Domes G, 2007).

### **Insights Within Psychiatry and Neurology**

Initially, to be able to judge the psychoactive effect of Oxytocin, one was searching for the relevance of the hormone within pathological variations. Here it was found, for example, that there are changed values of the hormone in people suffering from schizophrenia (Beckmann H, 1985). Equally, the changes in the concentration of Oxytocin were examined in people suffering from eating disorders (bulimia, anorexia) (Chibbar R. 1993; Demitrack M A 1990). Also in obsessive-compulsive disorders, one found significant variations (Den Boer J A, 1992). Through the application of Oxytocin in the Bulbus olfactorius of rats, one was able to release variations in their social behaviour (Dluzen D E, 1998). Effects on the memory were also discovered (Engelmann M, 1996; Fehm W G, 1984). Also, in senile dementia, it comes to a significant reduction in the Oxytocin production in the nuclei of the hypothalamus (Fliers E, 1985). On the other hand, increased concentration (33%) of Oxytocin is found in patients with Alzheimer's in the areas of

their Hippocampus, which is where our short-term memory is situated (Mazurek M F, 1987). In neurodegenerative illnesses, reduction in the metabolism of Oxytocin was found (Freund-Mercier M J, 1989). Likewise, connections between the metabolism of Oxytocin and autism were determined (Insel T R, O'Brien D J, 1999). A first success in the application of Oxytocin, through improved identification of emotional contents in autistic and Asperger patients, was in 2003 (Hollander E, 2003). Many behaviors that are usually related to the oxytocin system are impaired in autistic individuals, including social recognition and social bonding. These observations have lead researchers to look at oxytocin malfunctions as possible causative factors and also to experiment with oxytocin as a therapeutic treatment in autism. Researchers have found deficits in the oxytocin system in autistic individuals. One study found lower blood oxytocin levels in pre-pubertal autistic children (Modahl C, 1998) and another study found a lower ratio of oxytocin in relation to its immature forms (Oxytocin-X) in autistic children, reflecting a possible deficiency in the pathway converting Oxytocin-X to oxytocin. In these children, Oxytocin-X was not increasingly replaced with mature oxytocin with age, as in normal children (Green L, 2001). Other researchers suggest a bigger role for the related hormone AVP in the changes associated with autism. In animal research, the social/developmental functions of AVP in the male are similar and in some areas overlap the functions of oxytocin in the female. However AVP is associated with arousal, activity and aggression, as opposed to the soothing, pro-social effects of oxytocin. Exaggerated AVP activity that is not balanced by oxytocin's 'calm and connection' effects might explain some features of autism, as well as its increased prevalence among males, whose oxytocin system is less active. (Carter CS, 2007). These authors suggest that alternations in this system may be due to developmental or epigenetic factors, possibly including prenatal stress; exposure to excessive or deficient levels of hormones such as estrogens, androgens, AVP and oxytocin in the perinatal period; and factors such as illness, inflammation and early social experiences (Carter CS, 2007). In a double-blinded study, Hollander and colleagues found that an intravenous infusion of oxytocin at 2 to 3 weekly intervals significantly reduced repetitive behaviors in adults with autism and Asperger's syndrome compared to placebo (Hollander E, 2003). In another study, oxytocin also facilitated social information processing in autistic individuals (Hollander E, 2006) consistent with a similar finding in normal adults (Domes G, 2006). The origin of the abnormalities in the oxytocin/AVP system that are implied in these papers remains unknown. Some researchers hypothesize that interference in the perinatal period, especially through the ubiquitous administration of exogenous oxytocin (Pitocin) to women in labor and birth, may be involved. (Wahl RU 2004). It might be important to mention here that autism is also linked with high mercury levels. Studies have shown that it can interfere with the oxytocin production in the posterior pituitary gland (Kistner A, 1995; Mass C, 1996). If one of the thesis suggested in this paper, namely the possible downregulation of oxytocin receptors after the perinatal application of oxytocin should prove to be correct, what could this cause in a child that has already a reduced production of oxytocin (Including the mother) in the first place? Could this combination be another explanation for the aetiology of autism? Through its

key role in the controlling of human behaviour, it is seen as a basis in many neuro psychiatric illnesses (McCarthy M M, and Altemus D M, 1997).

### **Possible Alterations Due to Perinatal Application of Oxytocin**

In 1997, it was shown that when the uterus is administrated with Oxytocin, the Oxytocin receptors react with a downregulation, which leads to desensitisation of the tissue (Phaneuf S, 1997). As a possible mechanism, for the variation in the cells of the myometrium, transcriptional suppression and destabilisation of the mRNA were postulated through RNA bonding proteins. 2009 a study took place in Sweden, using 630 women. It was determined that the use of Oxytocin, during the early stages of birth, shortened the pain duration within missing cervical dilation, but that there was no significant decline in the rate of sectio or instrumental births (Brown A, 2009).

Also, the administration of Oxytocin during birth led to an increase of oxidative stress. The testers in the control group, testing the labour pain promoting Medication, showed significantly low levels of Glutathione compared to the other group of testers (Schneid-Kofman N, 2009). Through studies using mice with deficient Oxytocin, we know that even though sexuality and labour pains expire under normal conditions, there can be significant problems with nursing and social deficits within the mice (Takayanagi Y, 2009). In addition, a significant increase of aggression in the adult mice was found, independent of its gender. In the rat, it was proven that the admission of oxytocin after birth resulted in the heart of the animal containing a different number of receptors (Pournajafi Nazarloo H, 2007). Even though the psychic component of the admission of oxytocin has priority in this article, a contribution from a thesis, by a doctor from Uppsala, should be mentioned. The Doctorand had evaluated the data of 28,486 births during a ten year period. The goal was to examine use and abuse of Oxytocin admission. Uterine hyperactivity and the gift of oxytocin were assigned parallel to the metabolic Acidosis in the umbilical cord. Whereby, 75% of the uterine hyperactivity was attributed to the Oxytocin. In the conclusion of the study, it is said that 40-50% of the metabolic acidosis, that entails risks for a child, could have been prevented through proper use of Oxytocin and early recognition of foetal stress (Johnson M, 2009).

### **Discussion**

I am very grateful to Dr. Sarah Buckley who presented to me her own research on the subject of oxytocin and to introduce me to the concept of "hormonal imprinting". A theory introduced by Prof. Csaba. He states that perinatally, the first encounter between the maturing receptor and its target hormone results in hormonal imprinting, which adjusts the binding capacity of the receptor for life. In the presence of an excess of the target hormone or foreign molecules that can be bound by the receptor, faulty imprinting carries life-long consequences. (Csaba GB, 2004). Could this also be true for Oxytocin? What could be the consequences of an artificial perinatal application of an important physiological hormone named Oxytocin for our lives? Winstone (Winstone C, 2008) in her thesis looked at chil-



dren at the age of three after an oxytocin induced labour. She concluded that the polyvagal theory can serve to provide an understanding of factors, interpreted as (a) assertiveness (exemplifying social engagement) and (b) a need to Control Environment (exemplifying sympathetic nervous system activation) that were statistically relevant criteria when questioning the parents of the involved children. Both factors appeared to portray internally dysregulated responses to outside-in influences. The study's findings appear to her also support the concept of hormonal imprinting by Csaba, in that Pitocin use at birth seems to result in enduring faulty oxytocin systems in mother, infant, or both, apparently affecting internal regulation and mother-child attunement. In the studies mentioned above, much is quoted from the present state of the Oxytocin research. The main focus is on the psychic component of the hormone. The goal is not to discuss the indication criteria or if the use under birth is sensible or not, for this belongs in the hands of the gynaecologist. Yet it would be desirable to transmit the insights out of the areas of psychology and area of obstetric. What triggers the labour pain is not yet clarified, but we know that there is a complex interaction of estrogens, gestagens, adrenalin, prostaglandins, CRH, Oxytocinase and the sensitisation of the uterus that releases Oxytocin. Through Dr. Tagayanakis' research we know that rats do not need Oxytocin for birth. Its absence however released social deficits in the concerned rats. If this also applies to the person, it would be desirable to act sensitively when concerned with this subject. Many years ago, Michel Odent proposed to first promote the labour pains using woman-oriented components before it comes to being used as a birth intervention through the gift of Syntocinon (synthetic Oxytocin). Here he notes the importance of peace and quiet for the bearing woman. This activates the parasympathetic Nervoussystem, which is important for the birth. For the woman to be able to withdraw into aged brain parts, he recommends a minimisation of auditive, visual and olfactory attractions in order to retain a low activity of the Neocortex. Equally, it was positively valued that orientated accompaniment, care and noticing the sociocultural factors helped the effective procedure of labour pains. To have a person of confidence (midwife, Doula) present during birth, has been proved to be just as beneficial. This also applies to a positive communication during birth between mother and child. Which can be trained by the so called "Bindungsanalyse" founded by Hidas and Raffai (Hidas G, 2006) during the pregnancy. Other sore beneficial factors are warmth (warm baths), movement and different positions, the supply of fluid (including electrolyte glucose), mamillary stimulations (release of Oxytocin), massages, breathing exercises and later in birth the opening of the amniotic sac. Aspects that could boost the value of a midwife during birth. It would be desirable to research these methods closely, and the potential consequences of administering Oxytocin during birth. In Endocrinology, there is a principle that after an increased concentration of a hormone, it comes to the so-called Downregulation. According to my knowledge, this was never carried out for Oxytocin for mother and child. Pournajafi Nazarloo et al. were able to prove this for the Oxytocin receptors in the heart of a rat. Why should the same mechanism not also expire in a human? Could a prenatal application of Oxytocin not also lead to a variation in the amount of receptors? What would the offer of Oxytocin release, without having the corresponding number of receptors in the mother and the child? Could an appropriate bond take place? Often, after the

use of Oxytocin, many affected mothers report how they did not have immediate contact to the child after birth. This leaves behind traces of doubt and nervousness towards the concerned child. Mothers also report differences in the quality of bonding, comparing their Oxytocin child to its siblings which were born without the use of Oxytocin. Midwives also reported significantly higher rates of postnatal depression after an Oxytocin delivery. Equally babies often have problems approaching contact with their mothers, which results in problems when nursing. Disproportionately, the concerned babies that come into the practice show signs of traumatism. They long remain in the Moro Reflex, and are very easily startled. Often they are known as “screaming children”, and can only be calmed when on someone’s arm. Regularly, an infantile colic is diagnosed and the therapy is then arranged around this. They tend to show a change in skin complexion, and tend to sweat. They are usually restless and can only focus after a while. They can be hypotonic or hypertonic and often have problems with controlling their head. Even if these criteria are not to be seen as oxytocin specific, but rather as general criteria for a traumatised baby, we first became aware of the labour promoter, because these were the children, who were difficult to be comforted by their own mother. While other births consisted of days after days of strain, when they had brought it behind themselves, these children were usually able to be calmed through bodily contact. Could the missing of Oxytocin at the bonding sites be a possible mechanism for the persistent restlessness of these children? In addition, what would happen if the simultaneous gift of, for example, the hormone confidence, bonding, or love under the maximum level of stress during birth, could not release ambivalent feelings towards these subjects of our lives? Instead of being able to recover from the strain of the birth, in the arms of the mother or father, the Oxytocin itself could already be connected with a lot of stress but also with positive connotations. This, in itself, is a confusing situation for a new-born baby and it comes with many consequences when faced with burdens and relationships in later life. Mrs Dr. Wismer Fries has referred to the important phase after the birth through Oxytocin regulations in adopted, neglected children. Dr. Feldman refers to the responsibility Oxytocin has for bonding. The importance of this is known to us through the current research done by Henry and Bowlby. Through his studies, Dr. Takayanagi showed that signs of aggression in later life were a reaction to a lack of Oxytocin. What further areas could be triggered, due to an interruption in the Oxytocin balance, where its root could be found in the prenatal administration of Oxytocin? In adolescent Oxytocin children, we identified an increased amount of unspecified feelings as being a key symptom. Often, insecurity exists, there are interferences in school work and often problems with siblings or parents arose. Within a group, these children often felt left out, or they wanted to dominate. These are all symptoms that improved or even disappeared through the administration of potentized Oxytocin (C 30), so we were able to directly attribute the hormone. In adults, the symptoms expanded. Their ability to start relationships was difficult, and a significant ambivalence towards positive events was noticed (Yes beautiful, but...). We know about the relevance of the hormone within social communication, in the development of confidence within another and ones self, and with which instincts one comes into contact with a baby. We are aware of its relevance within sexuality, flirting, an erection and the perceiving of desire. We are

aware of the influence on neuropsychiatric problems such as schizophrenia, Morbus Alzheimer, autism, eating disorders, obsessive-compulsive disorder etc. Also, the psychological control the hormone has, for example on the heart is of great importance. When it comes to the subject of dealing with children, juvenile and adult aggression, problems with bonding, social phobias, etc. we are, at present, faced with large complex subjects. Would it be possible that some of these factors are partly explicable through our own birth? A plea goes out to the research, that more studies and an interdisciplinary exchange are undertaken for the future of our children.

### **Therapeutical Suggestions After an Application of Oxytocin**

The most important therapy after the application of Oxytocin under birth is the bodily contact with the parents. Both the olfactory system and the somatic sensory communication are the most important types of the exchange for the new-born. The next pillar of therapy here is in the practice of Osteopathy where solutions for somatic and psychic components of the birth are clarified. Damasio (Damasio A R, 2000) speaks about a somatic part of the memory. To transfer cranial bones, joints, body fascia and organs back to its optimal condition (in order to be able to release the unpleasant memories in the organism at the birth) is an effective part of the osteopathic therapy. The intravenous application of Oxytocin via drip women can have to stimulate the labour can cause them to lose control of the birth process, which often results in newborn children having extreme pressure enacted on their skull. Through this, as osteopaths perceive it; parts of the CNS' development could be impaired. The treatment of a babies potential shock experience, and the solution of cranial blockades usually lead to serious differences in the psyche, neurological and motoric development in the children. Regarding new-born babies after Oxytocin was administered, it is recommended that therapies, such as baby-massages (eg. Butterfly-Massage by Reich), therapies from Emerson, Terry, Harms, Castellano and later on also the "clinging-on" therapy by Prekop etc., are carried out. An effective method of treatment is the isopathic potentiation of Oxytocin on a potent of C 30, which after birth, is given as 3 Globuli per day for at least 4 weeks. Here, even in adults, dramatic differences appear after an Oxytocin birth. In the meantime, there are chat rooms, where one can exchange experiences and reactions after taking Globulin. A homeopathic treatment, thorough a competent therapist is also recommended. Presently in the practice, we are analysing the bond between mother and child under the simultaneous gift of isopathic Oxytocin (D6).

### **Summary and Perspective**

The effects of Oxytocin were restricted for years on the contraction of the Uterus and the lactation. Only a few years after its discovery were it used worldwide under birth to support labour pains and to achieve placenta relief. Yet its effects on psyche, sexuality, ability to bond etc. did not become public until the nineties. The postulated consequences of a possible Downregulation by Oxytocin within the person, was proven later through studies for animals. Also, within our obser-

vations we are shown that with new-born babies, growing-up children and adults the subject matter of Oxytocin is of social importance. What the research tells us is that it is not the distributed quantity Oxytocin, but rather the amount of receptors which result in the hormone unfolding. Lack of confidence in ones self and others, aggression and the inability to bond whether socially, or in relations, are present subjects of our modern time. It would be great for this article to contribute both for more selective contact with the promoter of labour pain as well as initiate a debate within the concerned occupational groups (gynaecologists, midwives, researchers). The overdue study of the potential psychological effects of Oxytocin, after half a century of its use, hopefully can be initiated in part by this article. In addition I would be very grateful, to have given concerned parents, children and adults the possibility, to have found their own story pattern in the above mentioned, and so be able to select a suitable therapy.

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