

ORAL MANIFESTATIONS OF SYSTEMIC DISEASES INFECTIOUS IN CHILDREN

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ABSTRACT

Every day is more common the presence of children in the dental office. For this reason, it is extremely important that the dentist is equipped to perform the treatment in dentistry and who has knowledge of systemic health, since children do not always manage to express themselves about what they feel. Based on this premise, this study aimed to review the literature on oral manifestations of systemic diseases that may signal to dental professionals about the need for referral of patients for medical care.

KEYWORDS: Pediatric dentistry, infection, disease.

1. INTRODUCTION

The oral manifestations are very common and may be the first signs and symptoms in diseases or systemic changes arising from some therapies. These oral lesions may indicate the start or progression of a disease and therefore may function as an early warning system for some diseases¹. The aim of this study was to review the literature on oral manifestations of systemic infectious diseases in childhood.

2. MATERIAL AND METHODS

This study was based on a literature review, conducted between March and May 2014. We performed a consultation to books and periodicals available on the Internet, and the University Severino Sombra library. The keywords used in the search were childhood infectious systemic diseases, Measles, Rubella, Roseola, Varicella and Scarlet as well as its synonyms. The inclusion criteria for studies were found to direct approach to the subject, containing description of the

disease, manifestations and treatment. Studies reporting the use of other diseases or who had not anything to add at work were excluded. Soon after, we sought to study and understand each disease individually, and of them, their oral manifestations and treatment.

3. LITERATURE REVIEW

SCARLET

According to Vranjac (2007)², the scarlet fever is an acute infectious disease caused by a bacterium called *Streptococcus beta hemolytic* of the group A. The scarlet comes from a reaction of hypersensitivity (allergy) to the bacterium produces substances (toxins) and can thus cause different disease in every person. It affects more children, is contagious through saliva droplets or infected secretions has incubation time of 2 to 4 days. A throat infection is a disease that appears associated with scarlet fever. As an initial oral manifestation is sore throat, white tongue and furred and with the progress of the disease to her lip and tongue tip is to look raspberry due to increased papillae. Can be early or late complications such as otitis media, sinusitis, laryngitis, meningitis, and other, being worse after curing the disease and rheumatic fever (heart valve damage), and glomerulonephritis (kidney damage that may evolve to renal failure). The diagnosis is based on clinical observation, but must be confirmed by a swab for throat swab. The treatment is penicillin; erythromycin is used in patients allergic to penicillin.

Barreto & Gonçalves (2012)³, reported that the scarlet is an acute infectious disease caused by *Streptococcus pyogenes*, more frequent in childhood. The oral manifestations are hypertrophied tonsils,

usually covered with yellow exudate. The tongue has a white coating with red spots that match swollen tongue papillae. After a few days the tongue resembles a raspberry. Even without treatment children improve after two weeks. To avoid complications it is recommended the use of penicillin; Alternatively amoxicillin, a synthetic penicillin, is used orally. In cases of allergy, the erythromycin can be used.

Shiramizo (2012)⁴, reported that the Streptococcal Pharynx (Scarlet), has a higher incidence in children aged 5 to 15 years, and is uncommon before the age of three. The scarlet is more common in winter and early spring with incubation period 2-5 days with eradication of the transmission after 24 hours of antibiotic, which is essential to prevent complications, improve symptoms and reduce transmission. The oral manifestations are sore throat, pain on deglutition, redness of the pharynx and tonsils, exudate, anterior cervical lymphadenitis, submandibular lymphadenitis, petechiae on the palate, uvula edema and hyperemia. Diagnosis: culture of oropharynx, collecting swab obtained from both tonsils and the posterior pharyngeal wall, as rapid test "QuickVue Strep A test", makes the detection of streptococcal antigens almost immediate. Streptococcal pharyngitis is a self-limiting disease with improved symptoms in 2-5 days without antibiotic. Recommendation: amoxicillin, orally; for allergy sufferers it is recommended to use clarithromycin, azithromycin and clindamycin. Indications: suppurative complications (abscesses) and non-suppurative (rheumatic fever with carditis, post streptococcal glomerulonephritis, and others).

VARICELLA

Carvalho & Martin (1999)⁵, have studied that varicella is caused by a herpes virus infection, varicella-zoster virus. Most cases occur in children under the age of 10, in late winter and early spring. Contagion occurs from 2 days before onset of rash, respiratory route, becoming less and less contagious. The incubation period is usually 14-16 days, but can occur from the 10th day or the 21th day. The diagnosis is usually clinical, with the appearance of vesicular lesions characteristic, on successive days, which evolve to crusts in a few days. The varicella in two situations is of great importance: when it affects children hospitalized because spreads quickly and in immunosuppressed, which is serious and sometimes fatal. After curing the virus can remain dormant, and its reactivation results in the framework of shingles. In children, the symptoms are unlike the adult, rarely leads to painful conditions, being easy to handle. In most cases of varicella and zoster in children, treatment is symptomatic. Pruritus in varicella can be alleviated by the local use of calamine or with the use of antihistamines orally. The use of antibiotics is required only in those cases where impetiginisation occur. The

antibiotic of choice is the group of penicillins, such as penicillin V and Amoxycillin; the first generation of cephalosporins such as cephalexin or cefadroxil could be indicated, or an antibiotic macrolide, such as erythromycin, clarithromycin or azithromycin.

Vranjac (2003)⁶ reported that, varicella (chickenpox) is a highly contagious disease caused by the varicella-zoster virus and mainly affects, under 15 years of age. Can occur throughout the year, but there are an increasing number of cases of late winter until spring. The period of the transmission is initiated two days before the appearance of blisters and goes to the phase crust. The incubation period ranges from two to three weeks, with an average of 14 to 16 days.

Castiñeiras *et al.* (2003)⁷, stated that, varicella (chickenpox) is a highly communicable, acute infectious disease caused by the varicella-zoster virus. The disease is most common in children between one and ten years. The transmission of the virus occurs primarily by respiratory secretions (saliva droplets, sneezing, coughing) from an infected person or by contact with fluid from the blisters. The first lesions commonly appear on the head or neck, but as they evolve quickly arise new lesions on the trunk and limbs and also in mucous membranes (oral, genital, respiratory and conjunctival). Several antiviral drugs (acyclovir, valacyclovir, famacyclovir) are available for the specific treatment of varicella.

Neville *et al.* (2009)⁸, reported the symptoms of varicella, which begins with malaise, pharyngitis, rhinitis, and then comes the characteristic itchy rash, the rash begins on the face and trunk, going to the ends. The oral and perioral manifestations are quite common and may precede skin lesions. The edge of the vermilion of the lips and palate are the places most frequently involved, followed by the buccal mucosa. The lesions begin as white-opaque vesicles 3 to 4 mm, which rupture to form ulcers 1 to 3 mm. The number and prevalence of oral lesions are related to the severity of the infection extra oral. In mild cases, oral lesions are present in approximately one third of affected individuals. Only one or two oral ulcers are evident and heal 1 through 3 days. Already in severe cases, patients have lesions which persist up to 30 for 5 to 10 days.

Kalil (2013)⁹, studied that the varicella, commonly known as chickenpox, is a disease caused by the herpes zoster virus, which affects mainly children. The most common form of transmission is through contact this viral particle - present in saliva, sneezing, coughing or even talking - with inhaled or oral mucosa of the individual. Transmission may also occur through direct inoculation. The patient develops bubbles and in general, the course content and the reddish edges. These bubbles appear on the skin of the whole body, including the scalp, mouth, and other mucous leather. The diagnosis is

primarily clinical, although there is the possibility of serological confirmation. In small children, no treatment is indicated, even baths permanganate, which, barely diluted known can cause skin burns. The ideal is to make proper skin hygiene with soap and water, during the usual bath and cut your fingernails child so she does not scratch the vesicles and run the risk of infect them. Specific treatment with medication, which is acyclovir, is only indicated in adults or patients over 12 years as the complication rate of the disease is usually higher.

MUMPS

Camargo & Mello (2001)¹⁰ showed that the mumps is a transmissible, usually benign acute infectious disease course. It is characterized by inflammation of the parotid gland, accompanied by pain and swelling. This disease can be widespread or systemic, due to the frequent involvement of the submandibular and sublingual glands, gonads, pancreas, nervous system and other organs. The mumps begins with nonspecific infection with low-grade fever, malaise, myalgia, arthralgia, and earache. After a few hours or days, is evident in the swelling of the parotid, one or both sides, with displacement of the pinna and effacement of the mandibular angle. There spontaneous pain that intensifies the opening of the mouth and even more, the intake of fatty foods. This phase lasts swollen salivary glands from 7 to 10 days. The main complications of the disease are: acute pancreatitis, orchitis, epididymitis, oophoritis, meningitis and meningoencephalitis. The virus is transmitted by direct contact with an infected person through droplets of secretion from oropharynx. The transmission period is greater than 2 days before until 2 days after onset of swelling of the parotid, although the virus may be isolated from the saliva to 6 days before to 9 days after the glandular involvement. For practical purposes, the patient can not be considered infectious 9 days after the start. The incubation period is in average 16 to 18 days, ranging from 12 to 25 days. It mainly affects children of school age, 5-15 years, without distinction of sex. Usually occurs in winter and early spring.

Campos (2010)¹¹ reported that the mumps, infectious parotitis, or mumps epidemic parotitis is an infectious disease whose etiologic agent is a virus of *paramyxoviridae* family, genus *Rubulavirus* (*paramyxovirus*), and its main clinical manifestation of inflammation parotid gland (the largest of the three salivary gland pairs) gland inflammation and possibly of other major salivary glands, promoting a swelling of the face and neck, it may be unilateral or bilateral. The incubation period is 12 to 25 days. The infection may result in subclinical or asymptomatic manifestations. The main signs and symptoms are: swelling of the salivary glands, especially the parotid gland, fever,

nausea, sweating, body aches, anorexia, headache, lasting 7 to 10 days, usually with spontaneous resolution. There is no specific treatment for this disease, only treat the symptoms.

The Sanofi Pasteur Group (2013)¹², pointed out that the mumps is a viral disease characterized by fever, swelling and tenderness of one or more salivary glands, usually the parotid and eventually the sublingual or submaxillary glands. Mumps virus belongs to the genus *Rubulavirus*, family *paramyxoviridae*. The mumps usually affects children. The mumps is spread from person to person by coughing and sneezing and by direct contact with saliva and secretions from the nose and throat of infected individuals. Contagion happens three days before and 4 days after onset of symptoms. Symptoms usually manifest 16 to 18 days after infection. Approximately one third of those infected are asymptomatic. There is no specific treatment for mumps. To relieve symptoms, it is recommended the use of painkillers and regular oral rinse.

RUBELLA

Kajiya *et al.* (1982)¹³, stated that rubella is also called German Measles is an infectious disease, with minimal or absent prodromal symptoms, a rash of three days' duration and generalized lymphadenopathy, particularly in retro-surricular, suboccipital and cervical chains. The transmission occurs through nasopharyngeal secretions from infected individuals, droplets of mucus and saliva, it is also possible can be isolated from the blood and urine from feces, and the transmission can also be by air. The transmission period is approximately one week before and at least four days after the onset of the rash. Its manifestations begin on the face, in small light red spots that spread throughout the body, over time increase the diameter and become macule papules. Rubella mitigated or absent in catarrhal phenomena also occur.

Castiñeiras *et al.* (2006)¹⁴, argued that the rubella is a respiratory immune-preventable infectious disease transmission. The infection is caused by the rubella virus which produces mild or absent manifestations. Usually has a benign evolution is more common in children and can occur in adults. Rubella occurs only once in life. The transmission period ranges from one week before until seven days after the onset of rash (red spots on the skin), being the period stains the highest risk of transmission. In 50% of cases the disease is asymptomatic. The clinical manifestations appear between 12 and 23 days after infection. The spots begin to evolve in the face and the rest of the body gradually (usually disappear in less than 24 hours), there is the swollen lymph nodes in the neck and low fever. There is no specific treatment for rubella; can be used to control symptoms of antipyretics and analgesics, with the exception of medicines

containing acetylsalicylic acid at risk of bleeding occur, because the rubella lowers the number of platelets.

Mercatelli (2013)¹⁵, described the rubella as an infectious disease caused by togaviruses. She also explains that togaviruses when reaches pregnant women in the first three months of pregnancy can cause serious problems such as fetal death. The transmission period is relatively long, since the incubation period begins 10 days before symptoms appear and extends for 15 more days of healing. The characteristic of the disease are reddish patches that appear first on the face and behind the ears, and then spreads throughout the body. Also may have headache, discomfort when swallowing, body aches, joints and muscles, runny nose, appearance of nodes and fever. The infection occurs commonly through the airways when people aspires droplets of saliva or have contact with nasal secretions of someone who is infected with the togaviruses. No specific medication exists to rubella, seeing that it is a virus. However, the treatment is to relieve symptoms, such as antipyretics and analgesics.

ROSEOLA

Aires (2012)¹⁶ reported that roseola is common among infants and preschool children is caused by *Herpesvirus hominis* type VI. The diseases have typical evolution: three to four days of high fever accompanied by irritability that precedes the appearance of maculopapular rash. The appearance of the eruption happens is when drastic decline of fever. There is no specific treatment for the disease, and his confirmation is used serologic testing.

Ribeiro *et al.* (2012)¹ first studied the sudden rash or roseola is a common childhood disease and has benign, self-limited evolution is caused by human herpes virus 6 and 7, is characterized by high fever a few days with the appearance of skin rashes when fever subsides. In the oral cavity appear erythematous macules and papules. The regions of the soft palate and uvula can show ulcerated with salient points rosy due to hyperplasia of lymphoid follicles in the submucosa.

Fernandes (2013)¹⁷ observed that the sudden rash (roseola) is a contagious disease caused by viruses - human herpes virus type 6 (2/3 of cases) and 7 (1/4 cases), and echovirus 16, among others. Children are more affected than adults. After incubation period of 5-15 days, appears high fever lasting about 3-4 days. Tracking the fever may arise: runny nose, cough, headache ("headaches"), hyperemic oropharynx without exudates ("red throat without white spots"), vomiting, diarrhea and enlarged lymph nodes ("swollen glands volume") cervical. As treatment, the use of antipyretics (acetaminophen/ ibuprofen) and enhance the intake of fluids during the febrile period. Provide a baths cooling, if necessary.

MEASLES

McDonald & Avery (1986)¹⁸, stated that measles is an acute contagious viral disease, which mainly affects children and typically occurs in epidemic form. The route of transmission is the respiratory tract after transmission by direct contact or aerosol infection. After incubation period of 8 to 10 days, develop malaise, fever, cough, conjunctivitis and photophobia, and finally maculopapular skin lesions appear on the face, which spread to the trunk and extremities. Oral lesions, termed "Koplik spots" are prodromal manifestation of the disease and typically occur two to three days before the development of cutaneous lesions. It is reported that these Koplik spots occur in 95 percent of patients with measles; they develop characteristically in the oral mucosa and appear as small blue-white blotches, surrounded by bright red border, then increase the number and coalesce into small patches. As a rule, the Koplik spots disappear by the time the skin lesions appear. The only treatment for the disease is rest and support measures.

Penna *et al.* (2002)¹⁹ reported that measles is an acute infectious disease, viral in nature (an RNA virus) which belongs to the genus *Morbillivirus*, family *paramyxoviridae*. It is extremely contagious and done directly from person to person through the nasopharyngeal secretions expelled by coughing, sneezing, speaking or breathing. Measles is very common in childhood. The evolution presents three well-defined periods: a) prodromal or catarrhal period: lasts 6 days; early in the disease arises fever, accompanied by productive cough, runny nose and seromucoso eye pain, conjunctivitis and photophobia. The lymph nodes are slightly increased in the cervical region and sometimes the abdominal give painful reactions in the abdomen. In the past 24 hours the period arises at the time of the premolars, in gemiana region, the signal Koplik - small white patches with erythematous halo, considered pathognomonic sign of measles; b) Exanthematous period: accentuation of all the symptoms already described, with significant depletion of the patient and the appearance of the characteristic rash occurs. The injury is exanthematous maculopapular, reddish in color, with distribution in cephalocaudal direction. c) Period of convalescence: a stain become darkened and appears fine scaling, remembering flour. Its incubation period usually lasts 10 days from the date of exposure to onset of fever, and about 14 days before rash onset. It is transmissible from 4 to 6 days before the onset of the rash until 4 days after. The diagnosis is clinical, epidemiological and laboratory. The treatment is symptomatic, with use of antipyretics, oral hydration, nutrition therapy to promote breastfeeding and proper hygiene of the eyes, skin and upper airway may be used.

According to Ribeiro *et al.* (2012)¹, measles is a systemic, acute exanthematous disease one of the most contagious of all communicable diseases. It is caused by the family *paramyxoviridae* and the genus *Morbillivirus* virus. In the oral cavity, one pathognomonic lesion of measles occur; it is known as Koplik spots. They precede skin manifestations 1-3 days. Are small bluish white spots that are formed mainly in the cheek, near the opening of the mucosa Stenon channel and are surrounded by a bright red halo. These blemishes increase in number and coalesce into plaques, generalized inflammation and swelling, ulcerations in various locations may occur (gingiva, palate and throat).

Vranjac (2013)²⁰, maintains that measles is a viral disease, respiratory transmission is highly contagious. Symptoms usually appear 7-18 days after exposure to a case and include: fever, runny nose, cough, conjunctivitis, and red patches all over the body. The virus can be transmitted to 5 days before and 5 days after the rashes.

4. DISCUSSION

Vranjac (2007)² and Barreto & Gonçalves (2012)³, agreed that scarlet fever is an acute infectious disease caused by *Streptococcus pyogenes*. Vranjac (2007)², states that children are the most affected because Shiramizo (2012)⁴, says the focus is on children and adolescents up to 15 years, and is uncommon before age 3 years old. Shiramizo (2012)⁴, said incubation time of the disease is 2 to 5 days, since Vranjac (2007)², 2 to 4 days. Vranjac (2007)² and Shiramizo (2012)⁴, agreed that one of the initial symptoms are sore throat. Vranjac (2007)² and Barreto & Gonçalves (2012)³, agreed on oral manifestations of the disease are tongue with white coating with red spots, with swollen buds, leaving her with raspberry aspect. Barreto & Gonçalves (2012)³, added that the tongue is covered with yellow exudate.

Carvalho & Martins (1999)⁵; Vranjac (2003)⁶; Castiñeiras *et al.* (2003)⁷ and Kalil (2013)⁹ stated that varicella is an infection caused by the varicella-zoster virus. Carvalho & Martins (1999)⁵ reported that most cases occur in children under the age of 10, already Vranjac (2003)⁶ said that affects younger than 15 years, also disagreeing with Castiñeiras *et al.* (2003)⁷ reporting that is common among children one to ten years and Kalil (2013)⁹ stated that only affects children, without specifying age. Carvalho & Martin (1999)⁵ and Vranjac (2003)⁶ agreed that the transmission period beginning two days before the appearance of vesicles. All the authors consulted, agree that the varicella is spread by the respiratory route, as Kalil (2013)⁹ that also commented that the virus is present in saliva, sneezing, coughing or even talking, so having regard to the oral mucosa of the patient. Neville *et al.* (2009)⁸, affirmed that the oral manifestations, lesions begin as

white-opaque vesicles that rupture and form ulcers already Kalil (2013)⁹ said the injuries have clear content and red border. Carvalho & Martins (1999)⁵ and Castiñeiras *et al.* (2003)⁷ reported that the varicella has no specific treatment for the disease but to the symptoms. Kalil (2013)⁹ said that in small children no treatment is indicated. Castiñeiras *et al.* (2003)⁷ and Kalil (2013)⁹, the agreed statement of Acyclovir as treatment indication, however Carvalho & Martins (1999)⁵ indicated drug such as: cephalosporins, (cephalexin or cefadroxil) and macrolides (clarithromycin or azithromycin).

Carmargo & Mello (2001)¹⁰, Campos (2010)¹¹ and Sanofir Group Pasteur (2013)¹² agreed that the Mumps is an acute infectious and transmissible disease, but only Campos (2010) 11 and Sanofir Group Pasteur (2013) 12 agree between Mumps itself that has a virus as the etiological agent of Paramyxoviridae family, genus Rubulavirus (paramyxovirus). Carmargo & Mello (2001) 10, Campos (2010) 11 and Sanofir Group Pasteur (2013) 12 agreed that such oral manifestation of the disease have, inflammation of the parotid, promoting swelling of the neck as a general manifestation everyone agreed it causes fever and malaise. Carmago & Mello (2001)¹⁰ supplement adding that with the swelling of the parotid there is a displacement of the pinna and effacement of the mandibular angle, causing pain and mouth opening in the intake of fatty foods, also said that this phase of swollen glands lasts from 7 to 10 days. Regarding the transmission of the virus, Carmargo & Mello (2001)¹⁰ and Sanofir Group Pasteur (2013)¹² agree that is made by droplets of secretions of infected people, and disagree with respect to the time of transmission, Camargo & Mello (2001)¹⁰ said it was two days before until two days after the onset of edema already Sanofir group Pasteur (2013)¹² said to be three and four days earlier after onset of the disease. About the period of incubation of the disease, Carmago & Mello (2001)¹⁰ and Campos (2010)¹¹ agreed be 12 to 25 days. Campos (2010)¹¹ and Sanofir Group Pasteur (2013)¹² agreed that mumps has no specific treatment, just to the symptoms of the disease.

Kajiyama *et al.* (1982)¹³, Castiñeiras *et al.* (2006)¹⁴ and Mercatelli (2013)¹⁵ agree that rubella is an infectious disease and is transmitted by nasopharyngeal secretions, but Kajiyama *et al.* (1982)¹³ also stated that can be blood isolated from urine and faeces. According to the period of communicability Kajiyama *et al.* (1982)¹³ said it was a week before to four days after onset of the rash of injuries, contradicting Castiñeiras *et al.* (2006)¹⁴, who stated that the transmission period will a week before to seven days after the appearance of the spots. Kajiyama *et al.* (1982)¹³ also diverge Mercatelli (2013)¹⁴ who claimed to be ten days prior to fifteen days after the cure. Kajiyama *et al.* (1982)¹³, Castiñeiras *et al.* (2006)¹⁴ and

Mercatelli (2013)¹⁵ agree that as a manifestation of the disease have red spots that will begin on the face and spreading to the body, also having increased of nodes in the neck and fever. Kajiyama *et al.* (1982)¹³ also stated that mitigated or absent in Rubella catarrhal phenomena occur. Cartiñeiras *et al.* (2006)¹⁴ said that the clinical manifestations appear between 12 and 23 days after infection, and the stains of the face and body usually disappear within 24 hours. Mercatelli (2013)¹⁵ said that beyond these manifestations also have headache, discomfort when swallowing, body aches, joints and muscles, and runny nose. Cartiñeiras *et al.* (2006)¹⁴ and Mercatelli (2013)¹⁵ agreed that rubella has no specific treatment, medicines to control symptoms, such as antipyretics and analgesics may be used as well. Cartiñeiras *et al.* (2006)¹³ further exalting should be avoided drugs containing acetylsalicylic the risk of bleeding, since the disease diminishes the number of platelets.

Ribeiro *et al.* (2012)¹ and Fernandes (2013)¹⁷ agreed that roseola is a disease caused by the human herpes virus 6 and 7 already Aires (2012)¹⁶ says only be caused by the human herpes virus 6. Aires (2012)¹⁶ said roseola is common among infants and preschoolers, as Ribeiro, *et al.* (2012)¹ affirmed that is common in childhood, and Fernandes (2013)¹⁷ says that it is a disease that affects more children than adults. Aires (2012)¹⁶ and Ribeiro *et al.* (2012)¹ agree that the disease causes high bluegrass and when it happens its decline come the maculopapular rash (skin rash). Ribeiro *et al.* (2012)¹ said that in the oral cavity appear erythematous macules and papules, since the region of the soft palate and uvula are shown protruding ulcerated with rosy points due to hyperplasia of lymphoid follicles in the submucosa. Aires (2012)¹⁶ and Fernandes (2013)¹⁷ agree that there is no treatment for roseola, Fernandes (2013)¹⁷ complements saying that you can use antipyretics and enhance the intake of fluids for symptoms, baths and cooling if required.

McDonald & Avery (1986)¹⁸, Penna *et al.* (2002)¹⁹ and Ribeiro *et al.* (2012)¹ agreed that measles is an acute viral infectious disease of nature, Penna *et al.* (2002)¹⁹ and Ribeiro *et al.* (2012)¹ further stated that their virus belonging to the genus Morbillivirus, family *paramyxoviridae*. McDonald & Avery (1986)¹⁸ and Penna *et al.* (2002)¹⁹ agree that the transmission is via nasopharyngeal, and the disease is most common in childhood. The oral manifestations spots measles McDonald & Avery (1986)¹⁸, Penna *et al.* (2002)¹⁹ and Ribeiro *et al.* (2012)¹ agree is the "Koplic spots" that are pathognomonic sign of the disease are bluish white circled in red, erythematous-halo. McDonald & Avery (1986)¹⁸ and Ribeiro *et al.* (2012)¹ agreed that Koplic stains disappear before the skin lesions appear. Penna *et al.* (2002)¹⁹ said that lymph nodes are swollen in the neck and sometimes the abdominal give intentional

reactions in the abdomen. The transmission period affirmed that will 4-6 days before the appearance of the rash until 4 days after, now, Vranjac (2013)²⁰ said that the virus can be transmitted to 5 days before and 5 days after the rash. McDonald & Avery (1986)¹⁸ and Penna *et al.* (2002)¹⁹ agree that the specific treatment for measles is existent but McDonald & Avery (1986)¹⁸ recommends rest and support measures for treatment since Penna *et al.* (2002)¹⁹ said that antipyretics, oral hydration, nutritional therapy and hygiene of eyes, skin and upper airways can be used.

5. CONCLUSION

Based on the literature reviewed conclude that it is essential for the Dental Surgeon knowledge about infectious systemic diseases contributing to the alert and diagnosis for early treatment thus avoiding complications and sequelae.

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