Comparative Study between the Intralesional Tuberculin (PPD) and Intralesional Measles, Mumps, Rubella (MMR) Vaccine in the Treatment of Molluscum Contagiosum in Children

Thesis

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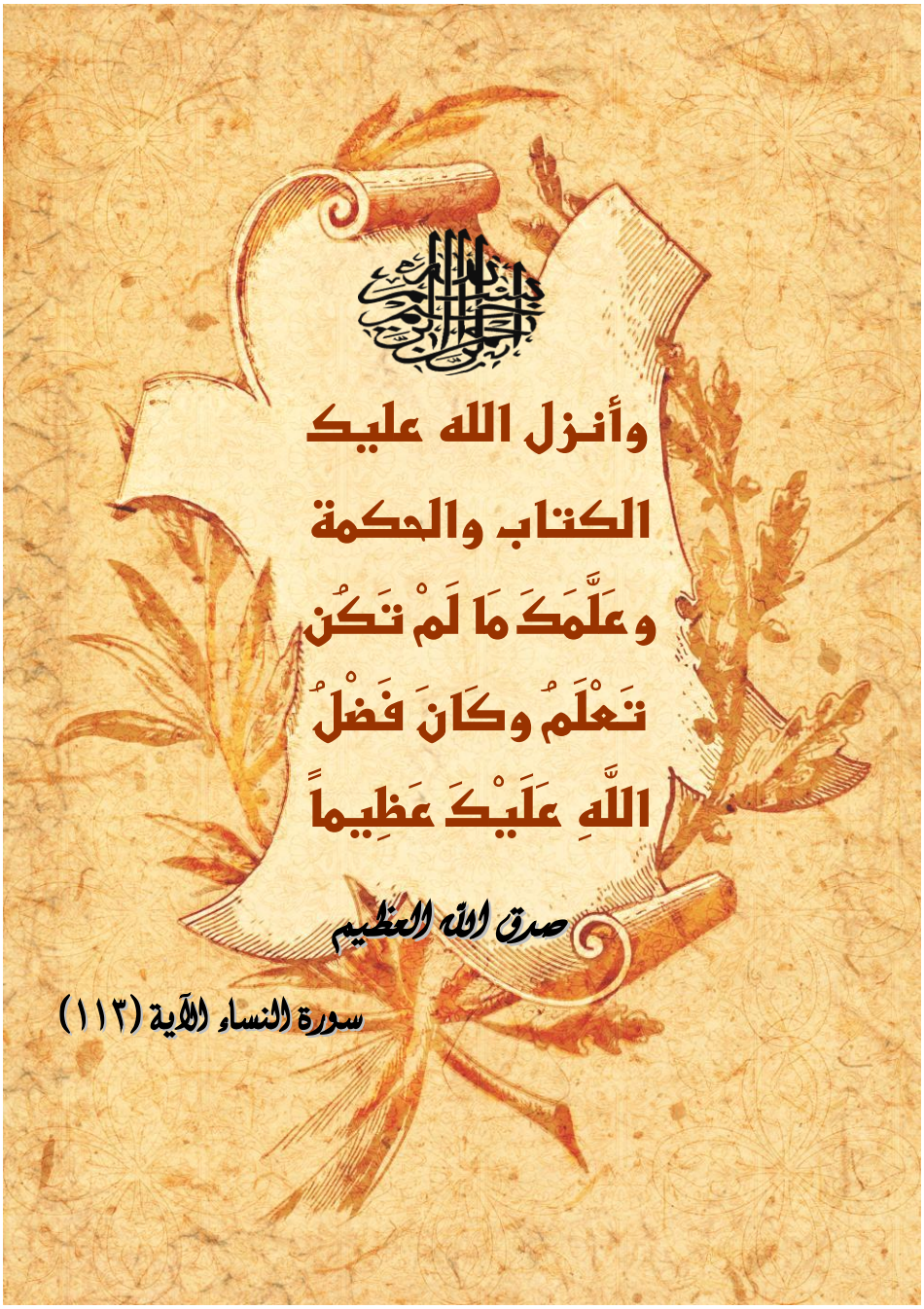
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Eman Ibrahim Abdel Aziz Abdel Rahim

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List of Abbreviations

AID	**:**	Acquired Immune Deficiency Syndrome
BCA	**:**	Bichloroacetic acid
BCG	**:**	Bacille Calmette Guerin
BRM	**:**	Biological response modifier
CDV	**:**	Cidofovir
CMV	**:**	Cytomegalovirus
EV	**:**	Enveloped virion
FDA	**:**	Food and drug administration
GAS	**:**	Glycosaminoglycans
HAART	**:**	Highly active anti retroviral therapy
HIV	**:**	Human immunodeficiency virus
HPV	**:**	Human Papiloma Virus
IFNα	**:**	Interferonα
IRIS	**:**	Immune reconstitution inflammatory syndrome
IL	**:**	Interleukin
IQ	**:**	Imiquimod
KOH	**:**	Potassium hydroxide
KTP	**:**	Potassium titanyl phosphate
LN	**:**	Liquid Nitrogen
MC	**:**	Molluscum Contagiosum
MCV	**:**	Molluscum Contagiosum Virus
MMR	**:**	Mumps, Measles and rubella
MV	**:**	Mature virion

List of Abbreviations *(Cont.)*

MW	**:**	Mycobacterial vaccine
NTM	**:**	Non tuberculosis mycobacteria
PCR	**:**	Polymerase Chain Reaction
PDL	**:**	Pulsed Dye Laser
PPD	**:**	Purified Protein Derivative
T.B	**:**	Tuberculosis
TCA	**:**	Trichloroacetic acid
Th1	**:**	T helper 1
TLR		Toll like receptor
TNF	**:**	Tumor Necrosis Factor
TU	**:**	Tuberculin unit
WV	**:**	Wrapped virion

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INTRODUCTION

Molluscum contagiosum (MC) is a viral infection of the skin or occasionally of the mucous membranes. It is caused by DNA poxvirus called the molluscum contagiosum virus (MCV). MCV has no animal reservoir, infecting only humans. There are four types of MCV, MCV-1 to -4; MCV-1 is the most prevalent and MCV -2 is seen usually in adults and often sexually transmitted ***(Hanson and Diven, 2003).***

MCV transmission occurs through direct skin contact between children sharing bath and between athletes sharing gymnasium equipment. MCV may be inoculated along a line of minor skin trauma (e.g. from shaving), resulting in lesions arranged in linear pattern. This process, termed autoinoculation, this also results from manipulation of lesions by the patient ***(Connell et al., 2008).***

Three distinct disease patterns are observed in 3 different patient populations: Children, adults who are immuno-competent, and patients who are immunocompromised (children or adult). MC is most common in children who become infected through direct skin to skin contact or indirect skin contact with fomites. Lesions typically occur on chest, arms, trunk, legs, and face. Hundreds of lesions may develop in intertriginous areas, such as axilla. Lesions may rarely occur on mucous membrane of the lip, tongue, buccal mucosa. The palms are spared. Patients with atopic dermatitis may develop

large numbers of lesions. In adult, MC most commonly is sexually transmitted disease. Healthy adults tend to have few lesions, which are limited the perineum, genitalia, lower abdomen, or buttocks. MC in healthy children and adults is usually self limited disease ***(Ferry -Blanco et al., 2007).***

MC is contagious until the bumps are gone (which, if untreated, may last up to 6 months or even longer). The time from infection to the appearance of lesions can range up to 6 months, with an average incubation period between 2 and 7 weeks ***(Hanson and Diven, 2003).***

Typically, the lesion of molluscum begins as a small, umblicated, painless papule that may become raised up to a pearly, flesh – colored nodule. The papule often has a dimple in the center. These papules are variable in number and may occur in lines, where the person has scratched. Scratching or other irritation causes the virus to spread in a line or in groups, called crops. The papules are small, discrete, waxy, skin coloured, dome shaped and usually 2-5 millimeters in size. There is usually no inflammation and subsequently no redness unless you scratch or dig on the lesions. The skin lesion commonly has a central core or plug of white cheesy or waxy material ***(Brown et al., 2006).***

In healthy patients, MC is generally self limited and heals spontaneously after several months. Although treatment is not required, it may help to reduce autoinoculation or transmission to close contact and improve clinical appearance. Intervention may

also be indicated if lesions persist. Therapeutic modalities include topical application of various medications such as (Iimiquimod cream, tretinoin), radiation therapy, immune response stimulation therapy, antiviral therapy, and / or surgery ***(Hanna et al., 2006).***

Varying degrees of physical trauma to individuals lesions are used and can be performed with cryotherapy, lasers, curettage**,** electrodessication, shave removal or duct tape occlusion ***(Weller et al., 1999; Lindau and Munar, 2004).***

Recently, intralesional immunotherapy by different antigens e.g. (MMR, Tuberculin antigen and Candida) has proved effective in treatment of different types of warts ***(Gupta et al., 2008).***

Intralesional immunotherapy has the potential advantages of clearance of both treated and untreated distant warts due to development of wide spread cell mediated immunity against human papilloma virus as a response to antigen injection, without scarring and a lower rate of recurrence which is attributed to acquisition of a long term human papilloma virus directed immunity ***(Lichon and Khachemoune, 2007; Dasher et al., 2009).***

The exact mechanism of action of intralesional immuno-therapy is still obscure. Intralesional immunotherapy employs the ability of immune system to recognize certain viral, bacterial and fungal antigens that induce a delayed type hypersensitivity reaction, not only to the antigen but against the

wart virus, which in turn increase the ability of immune system to recognize and clear human papilloma virus ***(Bacelier and Johnson, 2005).***

Recently intralesional injection of Candida antigen is an established and useful therapy for MC in children ***(Enns and Evans, 2011).***

Other antigens like measles, mumps, rubella (MMR) antigen and tuberculin (PPD) antigen have not been tried in MC.