

Skin Injuries Associated with Moisture: Dermatitis Associated with Incontinence (Iad)

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Introduction

Both the skin of newborns and the elderly have a structure and composition that makes it weaker and more susceptible to damage from friction and external aggressions. It is approximately 60% thinner than that of the adult and has a smaller amount of hair. In addition, the functions of the stratum corneum are diminished, there is less cohesion between the dermis and the epidermis, less sebaceous and sweat production, and the pH they present is neutral [1,2].

Direct, repeated and prolonged contact of urine and / or feces on the skin can lead to the development of incontinence-associated dermatitis (IAD) and other types of moisture lesions [3,4]. These types of injuries, especially when they appear in the elderly, constitute a public health problem since they affect the quality of life of the patient, limit autonomy and independence and have repercussions at the psychological, social and family level [2,5].

Its approach is a priority and a challenge for health professionals, so it is important to know the best preventive or therapeutic interventions and practices to adopt in its care and management.

Definition

IAD is defined as an irritating and inflammatory skin process, with loss of the skin's barrier function, caused by excess moisture in direct and repetitive contact on the skin, triggering maceration of the skin integument that can evolve into lesions with loss of skin integrity over time [3,6,7]. (Figure 1).



Figure 1: Moisture dermatitis

Epidemiology

According to data from the 2015 World Panel of Experts on ICD, the prevalence of ICD ranges from 5.5 to 50% and the incidence from 3.4 to 25%. Various factors that can justify these variations are considered, such as the lack of a validated data collection method, the scarcity of epidemiological studies, the diversity of healthcare settings and the correct differential diagnosis with pressure ulcer [3].

Etiology / Pathophysiology

The IAD development process involves the interaction between the physiology of the superficial layers of the skin and multiple factors, including not only moisture but also the action of chemical and physical agents [3,8].

Thus, IAD is the result of continuous contact of the moistened diaper with body fluids and the increase in pH caused by the conversion of urea in urine to ammonia. In addition, the pH can become more altered if the contact is with fecal enzymes (feces) such as ureases, lipases, proteases, finding a local temperature increase and favoring in turn a possible polymicrobial load (bacterial or fungal) in the skin of the diaper area [3,9].

On the other hand, the use of external agents such as plastics in diapers or absorbent devices may also be involved, adjusting the diapers too much causing the “diaper rhas”, colonies, fabric softeners, detergents and poor drying of the area [3].

Individually or jointly, these factors contribute to increased permeability of the skin and decrease the barrier function of the skin, weakening it and promoting dermatitis associated with incontinence [3,8].

Clinical Manifestations

Unlike the other types of injuries, they are generally bilateral and the most vulnerable areas that are affected by this pathology are the diaper area (genital, perianal and even buttocks) and the folds [3, 7, 9]. (Figure 2).



Figure 2: Dermatitis in the peri-anal and genital area

Regarding the signs and symptoms, it is characterized mainly by an erythema (reddened skin) due to vasodilation due to inflammation of the skin, more or less sensitive depending on its exacerbation and level of irritation of the skin integument of the affected area, accompanied by local edema [3,9]. (Figure 3).

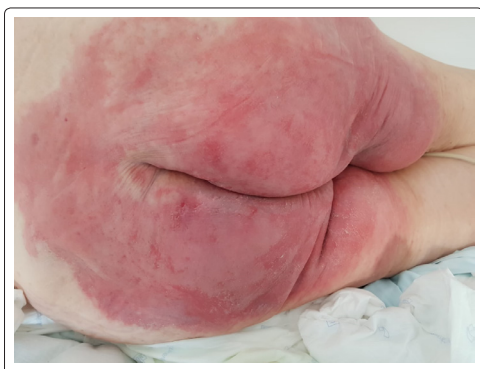


Figure 3: Erythematous dermatitis

On the other hand, it affects the patient’s nociceptive sensitivity, producing changes such as irritability due to pain, stinging from cleaning the area and changing diapers or absorbent devices [5].

In addition, it can present maceration (Figure 4), erosions and even bleeding, which further increase irritability when in contact with body fluids and even with hygiene and cleaning of the area due to friction that could be exerted [7].



Figure 4: Dermatitis with maceration

Other Injuries Caused By Moisture

IAD is included within a larger group of injuries called Injuries Associated with Incontinence (LESCAH). LESCAH are defined as: “the deterioration of skin integrity caused by prolonged exposure to various sources of moisture, including urine or feces, sweat, exudate from wounds, mucus or saliva” [7,10].

Taking into account the sources of humidity, several types are differentiated:

- Dermatitis associated with exudate due to inadequate management of exudate due to improper use of dressings with very high absorption capacity, thereby damaging the perilesional skin. (Figure 5).



Figure 5: Dermatitis associated with exudates

- Peristomal dermatitis, skin lesions that appear in areas where there is a clear interaction between the skin and effluents, liquids or secretions eliminated through the stoma (Figure 6).



Figure 6: Stoma associated dermatitis

- Dermatitis due to salivation or mucus, produced by prolonged contact with saliva or mucus from the oropharyngeal cavity or nasal passages.
- Miliaria rubra or sudamina, commonly called erasure, is due to excessive sweating and the acuity in its debut will depend on the degree of obstruction of the sweat glands, they are erythematous lesions of the pores that may present vesicles (Figure 7).



Figure 7: Sudamine-associated dermatitis

Differential Diagnosis with Pressure Ulcers

There are a series of clinical characteristics that can help to recognize IAD and differentiate it from other types of lesions, mainly pressure ulcers (PUs) in their early stages (Table 1 and Figure 8).

Table 1: Differential diagnosis

	DERMATITIS ASSOCIATED WITH INCONTINENCE	ULCERS
ETIOLOGY	Moisture increased by bodily fluids or misused devices	Due to friction, pressure or shear
LOCATION	Bilateral: Buttocks, folds, genitourinary area, perianal	In bony prominences, patients subjected to friction and poor ergonomic position
TISSUE AFFECTATION	Superficial and extensive (Dermis)	There may be necrosis and deep planes
ADGES	Irregular or starry	Regular and defined

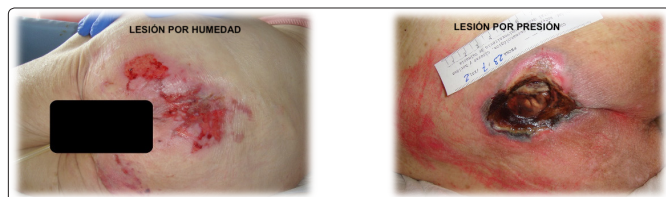


Figure 8: Differentiation of moisture ulcers - pressure ulcer

On the other hand, there are various scales for the assessment and monitoring of Incontinence Associated Dermatitis - Diaper Associated Dermatitis (DIA - DAP)[7].

- Visual Erythema Scale (VES)
- Grading scale of perineal dermatitis (Perianal Dermatitis

Grading Scale)

- Perianal Injury Measurement Scale (PAT Perianal Assessment Tool)
- Incontinence Associated Dermatitis (IAD) scale.
- Assessment of diaper rash due to dampness (DPH)

However, the iconographic scale of Diaper Dermatitis by Moisture Assessment (DPH) is described below since it not only describes the clinical signs, but is also accompanied by a graphic iconography of what the lesion is.

The evaluation of the diaper dermatitis due to humidity (DPH) (Figure 9) consists of 6 visual parameters of expression of the lesion [5,7].

Clearance (Mild Severity ++)

Injuries produced by a continuous scratching or dragging on the skin in the process of body hygiene (sponges, soaps, towels), presenting a thicker, shiny skin.

Inflammation/Erythema/Edema (Mild Severity +++)

Red / rosy coloration of the skin due to vasodilation of the cutaneous capillaries and is generally multifactorial in its etiology. Presenting an inflammatory cutaneous picture where congestive edema of the affected area is observed, he presents pain.

Desquaming/Eczema (Moderate + Severity)

Loss of the hydrolipidic mantle of the skin, with an appearance of dryness and flaking and cracking of the epidermis without forming fissures and itching.

Irritative Erythema + Exudation Erosion (Moderate severity)

Complete rupture of the skin and in a linear way, mainly in folds and due to humidity (cracks). In turn, it presents stinging / pain

Bacterial Infection-Fungal (High severity):

Areas of intergluteal folds such as the inguinal and even sub-abdominal in obese subjects, due to humidity and occlusion due to candida colonization: fold erosions, satellite pustules near the erythrosquamous area, exudation, burning sensation.

Ulceration (Very High Severity)

Injury with loss of all layers of the skin and can even reach the bone.

Affects Abvd

They present pain, stinging, itching; are signs that affect the general condition of the patient

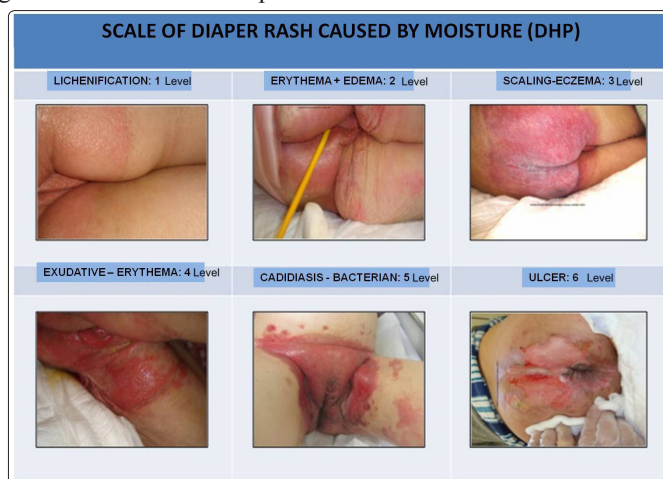


Figure 9: Skin injuries caused by moisture

Prevention

Prevention begins with the identification of patients at risk and the minimization of risks with the use of assessment tools, an adequacy of topical treatment and the use of devices for incontinence [3,11].

Likewise, in the prevention of these injuries, the education of caregivers and the management of incontinence through rehabilitation techniques and the use of appropriate containment products, such as absorbent devices and fecal collectors, is essential[3,11] (Figure 10).



Figure 10: Absorbent device

Another important aspect is the promotion of topical treatments and the use of a suitable cleaning technique in the area, since the risk decreases if it is done gently and without friction, with non-irritating products and even by drying by soaking or with the use of dryer in pleats [3,9,11].

Topical Treatment

The topical treatment of IAD should focus from the point of view of prevention and not only on the specific treatment when the lesion appears. Before applying the treatment, it is essential to review the ingredients of the products to be used to verify that there are no substances that may cause allergy or sensitivity to the patient [3].

The skin care recommendations can be included, fundamentally, in the cleaning and protection of the skin. However, sometimes an additional phase of skin hydration / repair or the use of treatments aimed at managing secondary skin infections may be required [3,6].

Regarding cleaning, it is recommended to clean daily and after each episode of fecal incontinence, avoiding frequent or unnecessary washing. Washing should begin in the genital and perianal areas from the inside out, continuing with the buttocks. A gentle dragging technique should be used, rinsing with lukewarm water and drying by soaking or with a dryer at room temperature, focusing especially on areas of folds. Soap should be acidic and scented disposable wipes should be avoided. Non-ionic surfactant based cleaning foam cleaners can also be used, which will favor the removal of biological debris gently without rubbing or damaging the skin layer [3,4,6,9].

Regarding the protection of the skin (Figure 11), topical treatments will be applied both to prevent the appearance of alterations and to treat the natural barrier of the skin. The formulation of products varies widely, so its use must be consistent with the manufacturer's instructions and its ability to protect the skin[3,6].

DERMATITIS BY MOISTURE PROTOCOL		
LESION	AFFECTATION DEGREE	ABSORBENT DRESSING AND TOPICAL TREATMENT
1 LICHENIFICATION	MILD	Body lotions or hyperoxygenated fatty acids
2 ERYTHEMA + EDEMA	MILD+	Zinc oxide paste / Silicone polyacrylate barrier films
3 SCALING + ECZEMA	MODERATE	Zinc oxide paste+ hydrocortisone cream
4 EXUDATIVE ERYTHEMA	MODERATE+	Astringent soaks (sulfated water 1 x 1000) + Zinc oxide paste
5 CANDIDIASIS/ IMPETIGO	HIGH	Astringent soaks (Potassium permanganate 1 x 10.000), antimycotic creams / Antibiotics
6 ULCER	VERY HIGH	Dressings in wet environment depending on the level of exudates and the characteristics of the injury (calcium alginate), zinc oxide cream

Figure 11: Diaper rash caused by moisture rating scale

Barrier creams or pastes based on zinc oxide (Figure 12) prevent maceration and even small abrasions can act as epithelializing agents. On the other hand, semi-permeable silicone barriers are useful (Figure 13) and 2% eosin as drying agent [5,7].



Figure 12: Zinc oxide barrier cream



Figure 13: Semi-permeable barrier with silicone base

Regarding petroleum jelly, it should be taken into account that excessive use can interfere with the absorption capacity of absorbent products. The use of zinc oxide powders, also known as "talcum powders", is not convenient, since they can be accidentally inhaled by the patient or produce foreign body granulomas [7].

In reference to skin hydration, in affected areas or those at risk of ICD, substances that contain moisturizers should be avoided as they attract and retain excessive water in the stratum corneum [3]. It is important to note that topical corticosteroids such as hydrocortisone cream are effective in moderate or severe diaper rash [7].

The application of antifungal creams is indicated in *Candida albicans* infection. Topical antibiotics, mainly mupirocin, should be used in case of bacterial superinfection. Both topical corticosteroids, topical antibiotics as well as antifungal creams should not be used as preventives [3,7].

Healing dressings in a humid environment with high exudate management capacity will be used when moisture ulcers are present (Figure 14)



Figure 14: Ulcer due to humidity



Figure 14: Super absorbent dressing

Use of Absorbents

The use of absorbents is indicated in patients with moderate, moderate or severe incontinence, when other treatment methods cannot be used. The choice of absorbent should be made based on the type of incontinence, the patient's anatomy, the degree of dependence, and the frequency and volume of losses [3,7].

The most widely used disposable absorbents are ultra-absorbents composed of a polyacrylate in cellulose that gels in contact with moisture. They are capable of absorbing even 80% of their volume and have the ability to neutralize the alkaline pH of the urine [7].

When placing the absorbent device, we will take into account both at the beginning and at the end of diaper changes, to carry out a meticulous hand washing to avoid nosocomial polymicrobial (bacterial or fungal) infections [7].

When placing the diaper, it should not be too tight since it could cause friction injuries such as the so-called "diaper rash" in the groin / thighs and waist, as well as occlusion of the area by not allowing the diaper area to perspire [7].

Frequent diaper changes, especially when recurrent episodes appear, are advisable and even keep the patient without absorbent for a few minutes so that the skin is not in contact with moisture

and avoid / delay epidermal maceration and destruction of this hydro-lipidic protective barrier. natural and physiological [3,7].

Complications

IAD can lead to complications, usually associated with [3,4].

- Skin superinfections, produced by fungi or bacteria.
- Appearance of other added skin lesions, such as pressure or shear ulcers.
- Gluteal granuloma with the presence of violaceous nodules associated with the use of talcum powder and / or high-potency topical corticosteroids.
- Hypopigmentation after healing if there has been erosion (Figure 15).
- High psychosocial impact on the patient and her family.



Figure 15: Hypopigmentation

Conclusions

When planning the most appropriate care and therapeutic measures for IAD, it is essential to bear in mind that humidity is not the only factor that predisposes IAD: there are other external physical and chemical agents that can promote it, such as the use of aggressive soaps with pH, frequent cleaning and improper use of absorbents. Therefore, the therapeutic measures to be followed to prevent and manage IAD should be oriented not only to skin care, but also to incontinence management and health education.

In this sense, the main measures are based on daily observation of the patient at risk, hygiene and daily washing avoiding irritants and friction and drying by soaking or with a hair dryer at body temperature and the use of barrier creams, especially made of oxide zinc. Likewise, an adequate choice of absorbent devices and pharmacological treatments must be made.

Finally, it should not be forgotten that health education constitutes the cornerstone of prevention and whenever possible we must motivate patients and their caregivers to be and feel that they are active subjects of their care.

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