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Dermatological adverse effects of cardiological drugs. A retrospective study of patients hospitalized in a dermatological ward in Gdansk in the years 2004–2013 and a review of the literature

Skórne reakcje nadwrażliwości spowodowane lekami stosowanymi w kardiologii. Badanie retrospektywne pacjentów hospitalizowanych na oddziale dermatologicznym w Gdańsku w latach 2004–2013 oraz przegląd piśmiennictwa

Paulina Flis[1], Dorota Mehrholz[1], Wioletta Barańska-Rybak[2], Roman Nowicki[2]

[1]Student Scientific Association, Department of Dermatology, Venereology and Allergology, Medical University of Gdansk, Poland
[2]Department of Dermatology, Venereology and Allergology, Medical University of Gdansk, Poland

Abstract

Introduction. A wide range of medications are used in cardiology. The treated population is often elderly with polypharmacy. The treatment sometimes comes with adverse effects and these patients can be met in all hospital wards.

Material and methods. We analyzed medical charts of all patients admitted to Department of Dermatology, Allergology and Venereology at Medical University of Gdansk in the years 2004–2013. The aim was to investigate the demographics as well as skin manifestations, abnormalities in laboratory results and treatment.

Results. Twenty-nine cases were found with hypersensitivity reactions manifested on the skin due to different drugs used in cardiology. The manifestations were diverse. Most presented as urticaria with or without accompanying angioedema (11), pemphigoid changes (9) and non-urticarial maculopapular exanthema (6). One patient presented with Stevens-Johnson syndrome (SJS) and 2 patients were diagnosed with vasculitis. The causative drugs were angiotensin converting enzyme inhibitors, loop-diuretics, calcium channel inhibitors, metoprolol, statins, acetylsalicylic acid, ticlopidine, molsidomine, doxazosin and enoxaparin. In our study we present three reactions not yet described in literature; bullous pemphigoid after torasemide and quinalapril and SJS after enalapril. The treatment of all patients consisted of discontinuation of suspected drug and in all except one medical therapy was required. In the patients with urticaria, anaphylaxis and maculopapular exanthema, oral glucocorticosteroids and oral antihistamines were given with good effect. The diagnosis of pemphigoid resulted in additional immunosuppressive treatment with adjuvant drugs. All patients recovered within a week without any sequelae.

Conclusions. Quick diagnosis of the hypersensitivity reaction and identification of the culprit drug is crucial for the patient. It is important to have a good communication between internal medicine doctors and dermatologist to succeed in treatment of the dermatological pathology and to plan further cardiological treatment. Although cardiological drugs are commonly used we could find a few hypersensitivity reactions due to this group of medications, compared to all patients admitted due to adverse drug reactions during the time studied.

Key words: angioedema, cardiology, exanthema, pemphigoid, Stevens-Johnson syndrome, urticaria

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Address for correspondence: Paulina Flis, Studenckie Koło Naukowe, Katedra i Klinika Dermatologii, Wenerologii i Alergologii, Gdański Uniwersytet Medyczny, ul. Dębinki 7, 80–211 Gdańsk, e-mail: paulinaflis@hotmail.com

Introduction

Adverse drug reactions (ADR) are a common cause of hospitalization. It accounts for 16% of admissions in Great Britain and for 13% in France. In developing countries the number is assumed to be even higher. The most common causative drugs are NSAIDS and antibiotics [1]. Cardiological treatment involves a wide range of medications. Antihypertensives, lipid-lowering agents, anti-platelet agents, diuretics, anticoagulative agents and vasodilators are some of them. Polypragmasy is commonly applied. As for now, some of the drugs are well known to be a possible cause of hypersensitivity. For example, since the introduction of angiotensin converting-enzyme inhibitors (ACE-I) in the 1970s they are known to cause angioedema in the adult population [2]. Aspirin is also well known for its urticarial effects in a large part of the population. Less known are the hypersensitivity effects of calcium (Ca) channel blockers, low molecular weight heparin, beta-blockers, statins and nitrates. We initiated a study of ADR's in Department of Dermatology, Venereology and Allergology in Medical University of Gdansk in the years 2004–2013 with the aim of investigating the manifestations of dermatological ADR's of drugs used in cardiology.

Materials and methods

We analyzed medical charts of all patients admitted to Department of Dermatology, Allergology and Venereology at Medical University of Gdansk between January 2004 and December 2013. We investigated the medical charts of patients with the symptoms "pemphigoid", "urticaria", "rash", "angioedema", "vasculitis", "exanthema postmedicamentosa" and "under diagnosis" in the hospital database. We excluded the cases where a cardiological drug was not a possible agent. The data collected from the medical chart included age, gender, main symptoms, time from first intake of drug to first symptom, concomitant medications and diseases, laboratory (lab) diagnostic tests, medical treatment and results of the treatment. The probability of the ADR was estimated using the Naranjo score [3]. We searched PubMed for all drugs mentioned as a suspected cause of the adverse reactions with terms as "pemphigoid", "angioedema", "hypersensitivity", "vasculitis", "urticaria", "rash", "Stevens-Johnson syndrome" and "allergy". We compared the literature with our results focusing on the clinical picture.

Results

Between January 2004 and December 2013 there were 29 patients with hypersensitivity reactions caused by a variety of cardiological drugs presented in Table 1. The patients were between 48 and 82 years. The mean age was 67 years. 26 of the patients were females (90%) and 3 were males (10%). The manifestations were diverse. Most manifested as pemphigoid (Grade III ADR, 9 patients) followed by angioedema (Grade III ADR) with or without accompanying urticaria (6 patients), non-urticarial maculopapular exanthema (Grade II ADR, 6 patients) and isolated urticaria (Grade II ADR, 5 patients). Two patients had symptoms of vasculitis (Grade III ADR) and one patient presented with SJS (Grade III ADR). The frequency of manifestations is presented in Figure 1. All patients were diagnosed upon

Table 1. Causative agents in the study group of 29 patients with hypersensitivity reactions admitted to the dermatology ward in the years 2004–2013

Causative agent	Nr of patients
Metoprolol	1
Ticlopidine	1
Molsidomine	1
Acetylsalicylic acid	3
Enalapril	3
Tialoride/nitrendipine	1
Amlodipine	1
Diltiazem	1
Statin (unspecified)	2
Indapamide/rosuvastatin	1
Perindopril/indapamide/amlodipine	1
Atorvastatin/ramipril	2
Doxazosin	1
Enoxaparin	1
Captopril	1
Quinalapril	1
Ramipril	1
Anti-hypertensive (unspecified)	2
Furosemide	3
Torasemide	1
Total number of patients	29

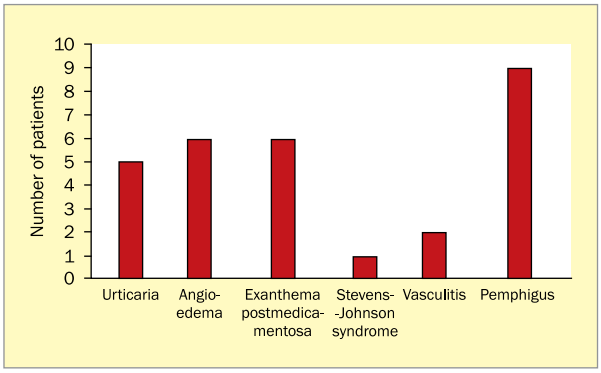

Figure 1. Manifestations of ADR's after cardiological drugs in patients admitted to department of dermatology 2004–2013. Total nr of patients = 29

the anamnesis, clinical picture and lab abnormalities. All pemphigoid lesions were diagnosed by histopathology and immunofluorescence. Ig levels in plasma were measured in five patients and were high in three of them. Other lab abnormalities included leukocytosis (9/29), eosinophilia (12/29), neutrophilia (8/29), monocytosis (7/29), lymphopenia (5/29), CRP > 5 (10/29), ESR > 20 (2/29), high fibrinogen (2/29) and high D-dimer (5/29) (Table 2).

Table 2. Causative agents, manifestations and laboratory abnormalities in the study group

Patients' number	Causative agent	Manifestation	Laboratory abnormalities
1	Metoprorol	Exanthema postmedicamentosa	Neutrophilia 11.1 G/l, monocytosis 1.1 G/l, lymphopenia 0.5 G/l
2	Ticlopidine	Acute urticaria	No relevant abnormalities
3	Molsidomin	Acute urticaria	Monocytosis 0.83 G/l
4	Acetylsalicylic acid	Angioedema, acute urticaria	Neutrophilia 8.61 G/l, lymphopenia 0.81 G/l
5	Acetylsalicylic acid	Acute urticaria	Leukocytosis 17.94 G/l, neutrophilia 11.42 G/l, eosinophilia 1.92 G/l
6	Diltiazem	Acute urticaria	Leukocytosis 13.32 G/l, eosinophilia 0.97 G/l
7	Statin	Acute urticaria, angioedema	CRP 9.6 mg/l, eosinopenia 0.04 G/l
8	Acetylsalicylic acid	Angioedema	No relevant abnormalities
9	Perindopril/indapamide/amlodipine	Angioedema, acute urticaria	Neutrophilia 13.8 G/l, leukocytosis 16.4 G/l, lymphopenia 1 G/l, CRP 88.5 mg/l
10	Doxazosin	Exanthema postmedicamentosa	Neutrophilia 13.83 G/l, leukocytosis 16.5 G/l, D-dimer 691 ng/ml, monocytopenia 8.9 G/l
11	Enoxaparin	Acute urticaria	No tests done
12	Enalapril	Angioedema	No relevant abnormalities
13	Tialoride/nitrendipine	Exanthema postmedicamentosa	No relevant abnormalities
14	Ramipril/atorvastatin	Exanthema postmedicamentosa	Eosinophilia 1.12 G/l, monocytosis 1.06 G/l, fibrinogen 5.28 mg/dl, lymphopenia 0.59 G/l, ESR 77 mm/h, CRP 50.3 mg/l
15	Enalapril	Stevens-Johnson syndrome	Eosinophilia 5.7 G/l, CRP 25 mg/l, lymphopenia 0.87 G/l, fibrinogen 4.58 mg/dl and D-dimer 357 µg/ml
16	Anti-hypertensive	Exanthema postmedicamentosa	No relevant abnormalities
17	Captopril	Exanthema postmedicamentosa	Eosinophilia 0.95 G/l
18	Amlodipine	Vasculitis	CRP 39 mg/l, ESR 20 mm/hour, Ig 0,9 G/l, D-dimer 4614 µg/ml
19	Anti-hypertensive	Angioedema, exanthema postmedicamentosa	CRP 11.64 mg/l, Ig normal
20	Indapamide/ /rosuvastatin	Vasculitis	No relevant abnormalities
21	Furosemide	Bullous pemphigoid	Eosinophilia 1.34 G/l, ESR 62 mm/h, Monocytosis 0.84 G/l
22	Quinalapril	Bullous pemphigoid	Leukocytosis 12.59 G/l, monocytosis 0.94 G/l, eosinophilia 1,42 G/l, D-dimer 12 000 µg/ml
23	Ramipril/ /atrovastatin	Bullous pemphigoid	CRP 20 mg/l, leukocytosis 12 G/l, eosinophilia 1.67 G/l, monocytosis 0.82 G/l
24	Statin	Bullous pemphigoid	D-dimer 1509 µg/ml
25	Enalapril	Bullous pemphigoid	CRP 15.8 mg/l, ESR 48 mm/h, eosinophilia 2.72 G/l
26	Furosemide	Bullous pemphigoid	Ig 0.06 G/l, leukocytosis 17.38 G/l, ESR 33 mm/h, eosinophilia 7.7 G/l, neutrophilia 8.86 G/l, AspAT 44 U/l
27	Torasemide	Bullous pemphigoid	Ig 0,1 G/l, GGT 37 G/l, neutrophilia 8.42 G/l, eosinophilia 0.68 G/l
28	Furosemide	Bullous pemphigoid	Leukocytosis 15 G/l, eosinophilia 7 G/l, CRP 11 mg/l
29	Ramipril	Bullous pemphigoid	CRP 67 mg/l, leukocytosis 14.8 G/l, neutrophilia 9.98 g/l, monocytosis 1,23, Ig normal

CRP — C-reactive protein; ESR — erythrocyte sedimentation rate; AspAT — aspartate aminotransferase; GGT — gamma-glutamyl transferase

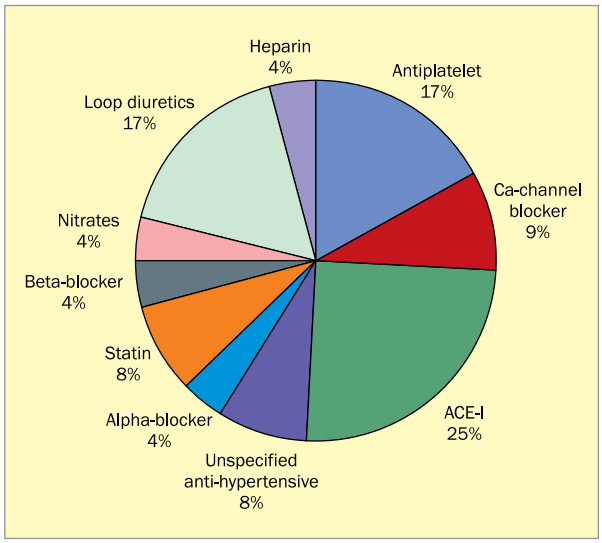

Figure 2. Causative drugs in the study group; Ca — calcium; ACE-I — angiotensin converting-enzyme inhibitors

In 11 of 29 patients the approximate time between first intake of suspected drug and the onset of first symptoms was documented, while in the other 18 there was no information about it in the medical record. In the patients for whom the time was known, 82% had the onset < 7 days after first drug intake. The shortest time between first drug intake and symptoms was 2 hours (enalapril, angioedema). The Naranjo score for 83% of the cases was 5 or higher, thus a probable adverse reaction (previous case reports, appeared after introduction of a new drug, improved when discontinued, no possible alternative causes).

In five patients there were multiple possible agents suspected, with a Naranjo score of 3, thus a possible ADR. The patients had several newly introduced drugs which could have caused the reaction. In one case the causative agents were perindopril/indapamide/amlodipine, the second tialoride/nitrendipine, the third indapamide/rosuvastatin and in two cases ramipril/atorvastatin. The causative drug-groups are presented in Figure 2. Patients with a Naranjo score < 5 are not taken into account in this graph.

Twenty-five of 29 of patients were also treated with other antihypertensives, potassium supplements, diuretics and other drugs at admission. The median number of other medications patient took every day was 5,5 drugs/daily. One patient did not know what other drugs she took. One patient took 14 other drugs every day beyond the drug thought to cause the reaction. Three patients took no other medications than the suspected drug at the time of admission.

The treatment consisted of discontinuation of suspected drug and introduction of relevant pharmacotherapy. In the group of patients with angioedema, urticaria, vasculitis and eczema oral glucocorticosteroids (prednisone 30–50 mg) and oral antihistamines (hydroxyzine 45 mg, cetirizine 10 mg × 2, loratadine 10 mg) were given in 50% of cases with good effect. In 30% of patients intravenous (i.v.) glucocorticosteroids (prednisolone 25–100 mg, dexamethasone 8–50 mg i.v.) was required for full resolution of symptoms. In two cases oral prednisone 40–50 mg was given alone, in one case only a glucocorticosteroid cream was required and in one case only acetylsalicylic acid-free diet was applied. In the group of pemphigoid reactions (9 patients) the treatment was different. Antihistamines were only applied in one patient due to the lack of effect in pemphigoid changes. Eight patients received oral prednisone 30–70 mg/daily. Two out of 9 patients received i.v. corticosteroids due to lack of effect of oral steroids. Seven out of 9 patients in the pemphigoid group received azathioprine as an adjuvant treatment in the dose of 100 mg/day. In 3 out of 9 patients dapsone 100 mg/daily was added due to its immunomodulatory effects. All patients improved within a week of treatment.

Discussion

According to guidelines for hypertension and heart failure treatment, polytherapy is often indicated to achieve therapeutic goals. Many of the cardiological patients receive multiple drugs and the cause and effect analysis is difficult. One of our patients developed purpura over whole body after amlodipine. Known ADR's after dihydropyridines are among others hyperpigmentation, erythema multiforme, toxic epidermal necrolysis (TEN), and pedal edema [4–8]. There is also a high incidence of angioedema, as reported by many case reports and the ALLHAT study where 42 418 randomized patients treated with antihypertensives were followed. Six percent of those who developed angioedema were assigned to amlodipine [9]. Amlodipine has also been reported causing petechial rash on lower limbs bilaterally in a woman [10]. The authors concluded that the rash was not due to vasculitis, because the patient had no other symptoms or abnormalities in lab results. Their theory was that it was caused by increased capillary hydrostatic pressure due to selective relaxation of precapillary sphincter in legs as suggested by Messerli and Grossman [7]. In our case a skin biopsy was performed and revealed a leucoclastic vasculitis. There are three similar case reports in literature where vasculitis was confirmed [11–13]. The Naranjo score in our case was 7, thus a probable ADR.

Diltiazem is a non-dihydropyridine Ca-channel blocker that has been reported to cause a wide range of dermatological ADR's, the best known is photodistributed hyperpigmentation [14], but also urticaria, angioedema and urticarial vasculitis have been reported [15, 16]. It is conclusive with the ADR that was found in our patient in whom diltiazem caused urticarial lesions that relieved upon discontinuation of the drug, oral prednisolone 30 mg daily and loratadine 10 mg.

Only one case of hypersensitivity reaction was found after beta-blockers in our study. This was assigned to metoprolol. Our patient presented with a non-urticarial maculopapular rash that resolved after prednisone 30 mg daily and cetirizine 10 mg × 2. Naranjo score was 6. It is a well-known drug and there are reports of urticaria, angioedema and dermatitis as adverse effects [17, 18]. Nguyen et al. reported a case of lichenoid dermatitis after beta blockers thought to be caused by activation of cytotoxic CD8+ T cells, which causes epidermal damage [19]. It was confirmed by skin biopsy, and although skin biopsy was not performed in our case, the clinical picture was similar. A possible etiology may be the proposed property of beta-blockers to enhance IgE-formation concluded in a number of studies [20, 21].

Regarding antiplatelet agents, acetylsalicylic acid is well known to cause urticaria and respiratory hypersensitivity by its mechanism of action. Some authors suggest that it involve diversion of arachidonic acid metabolism from prostaglandin to cysteinyl leukotriene formation leading to direct effects on blood vessels and delayed mast cell degranulation with release of histamine [22]. In our study two patients developed angioedema and one patient urticaria. The patient with urticaria suffered from asthma, which can suggest an atopic trait exaggerated by acetylsalicylic acid in a cardiological dose (75 mg).

A less known cause of urticaria is ADP-inhibitors of the thienopyridine group such as clopidogrel and ticlopidine. The most commonly used drug in this class is clopidogrel. There are several studies on ADP-inhibitors and case reports showing a wide spectrum of dermatological ADR's — most commonly generalized exanthema, localized skin reactions and angioedema or urticaria [23]. In our study, one patient developed acute urticaria 2–3 days after first administration of Ticlopidine. It has been suggested that there is cross-reactivity between thienopyridines because of the similar chemical structure of the substances [24]. Cheema et al. found that among 62 patients with clopidogrel allergy, 14% had cross-allergy to ticlopidine [23]. In our patient, ticlopidine was switched to clopidogrel and the symptoms resolved. Still, it is worth to remember that a significant amount of people may be allergic to all three thienopyridines (clopidogrel, ticlopidine and prasugrel). Cheema et al. [23] concluded that 7% of patients were allergic to all three agents. One solution to patients with cross-sensitivity can be desensitization therapy. Several articles describe successful desensitization to clopidogrel hypersensitivity in protocols that require interruption of drug usage. Because of the need of continuous treatment after e.g. stent implantation, an option today is also to treat the allergy with corticosteroids and antihistamines without interruption of the drug intake. It is among others presented in a study conducted by Campbell et al. where it was shown that 88% of patients had full resolution of symptoms with just medical treatment and no discontinuation of the drug [25]. Therefore, it seems that one can try to switch to another agent, but there is a significant risk that the hypersensitivity reaction will be maintained. If that is the case, there are novel tools to find a solution without risking thrombosis.

One patient developed acute urticaria after molsidomine, which is a vasodilating drug used in coronary artery disease. It is metabolized in the liver to linsidomine which releases nitric oxide. In the literature there is one report of an allergic reaction after molsidomine intake [26]. Our case is the first case reported in English. The Naranjo score for this patient was 6, thus a probable ADR.

One patient presented with acute urticaria and angioedema after an unknown statin. In literature there are six case reports regarding different statins and urticaria [27] and according to the author, the manufacturers of statins suggest an incidence of urticaria up to 7.7%. Thus, urticaria seems to be a common side effect of statins, but still has not been known so well as the hypersensitivity of ACE-I, which the author claims to be less common. Rare dermatological side effects of statins include dermographism [28] and erythema multiforme [29]. Paradoxically, statins has also been shown to have allergy protection properties in asthmatic mice [30]. There was one patient in our study that developed a purpuric rash of upper and lower limbs and trunk after rosuvastatin. In this case there was a possible other agent, indapamide, thus the Naranjo scoring suggested only a possible ADR. Another patient had a maculopapular rash after atorvastatin. In this case the patient had also newly introduced ramipril in her drug regimen, thus the Naranjo score is only 3. One patient presented with bullous pemphigoid after an unidentified statin. One case of lichen planus pemphigoid due to a statin (simvastatin) has been reported in literature [31].

Six patients developed hypersensitivity reactions after ACE-I. One patient developed angioedema and another developed Stevens-Johnson syndrome (SJS) — both after enalapril. In literature there is one case of toxic epidermal necrolysis (TEN)/SJS after captopril [32]. To our knowledge, this is the first case of SJS reported due to enalapril. The third patient developed an exanthema after captopril. There are several case reports of lichenoid skin reactions after captopril [33, 34] which are similar to our case. Three of our patients developed bullous pemphigoid after different ACE-I (quinalapril, enalapril and ramipril).

Bullous pemphigoid is an acute autoimmune skin disease, involving the formation of blisters between epidermis and dermis. It is classified as a type II hypersensitivity reaction. There are six case reports in the literature of pemphigoid reactions after ACE-I. Three of them describe cases of lichen planus pemphigoid caused by ramipril and captopril [35–37]. The other case reports describe bullous

pemphigoid after usage of captopril and lisinopril. To our knowledge our case of bullous pemphigoid after quinalapril is the first reported. In summary, angioedema is a well-known ADR after ACE-I. Surprisingly only one patient was admitted to the department for angioedema caused by an ACE-I in the time-period studied. Bullous pemphigoid was the most common hypersensitivity reaction after ACE-I in our clinic during the study. A probable reason is that there is good knowledge of angioedema due to ACE-I among physicians in different fields of medicine and quick withdrawal of the culprit drug and treatment is applied to in-patients in different wards. Pemphigoid reactions may be more difficult to identify as an adverse drug reaction and also requires other treatment.

The most common culprit drug in the group of pemphigoid patients was loop-diuretics (furosemide and torasemide). Four out of nine patients manifested with bullous pemphigoid. There are several reports of pemphigoid after furosemide; however, there are no reports related to torasemide. The reason may be that torasemide is newer drug than furosemide and not as commonly used.

One patient developed a pruritic macular rash after enoxaparin. It occurred 7 days after first administration, and thus corresponds to a delayed hypersensitivity reaction (type IV). Schindewolf et al. [38] conducted a study of 320 patients treated with heparins, 24 of them developed dermatological ADR's consistent with delayed hypersensitivity, of which 59.7% were treated with enoxaparin. In our clinic this was only seen once during the time-period studied. Our theory is that most patients treated with enoxaparin are already treated in a hospital setting, and thus the patient is only referred to the Dermatology and Allergology ward in case of treatment resistance or if the patient is treated in an outpatient setting.

It is worth to mention that the frequency of manifestations of the drug reactions is not proportional to the general population treated with cardiological drugs. The patients admitted to a dermatological ward most often have non typical skin lesions like for example pemphigoid or SJS. The occurrence of pemphigoid as a drug reaction is probably not as common in an internal medicine ward as in our clinic. Nevertheless, it is important for cardiologists to have knowledge about a variety of adverse events after cardiological drugs.

Conclusions

Although cardiological drugs are commonly used we could find few ADR's in the Dermatology ward due to this group of medications as compared with all patients admitted. In our study we found three reactions not described in literature — bullous pemphigoid after torasemide, quinalapril and SJS after enalapril. The manifestations of hypersensitivity are diverse and can sometimes be life-threatening if discontinuation and proper treatment is not applied. As in our study, the group of patients is often elderly and as this population is growing, there will be an increasing incidence of ADR's due to cardiological drugs in different kinds of wards. There is often polypharmacy and the culprit drug cannot always be identified. Quick diagnosis of the hypersensitivity reaction and identification of the causative drug is crucial for the patient. The treatment depends on the diagnosis of the skin lesions but generally corticosteroids are required. It is important to have a good communication between internal medicine doctors and dermatologist to succeed in treatment of both the dermatological pathology and to plan further cardiological treatment.

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Conflict of interest(s)

None declared

Streszczenie

Wstęp. W kardiologii stosuje się wiele różnych leków. Poza tym pacjenci kardiologiczni to głównie osoby w podeszłym wieku przyjmujące wiele preparatów. Stosowane terapie nie są pozbawione działań niepożądanych, a chorzy trafiają z występującymi u nich objawami na różne oddziały szpitalne.

Materiał i metody. Autorzy, na podstawie dokumentacji medycznej, wykonali analizę retrospektywną reakcji polekowych wśród pacjentów hospitalizowanych w Klinice Dermatologii, Alergologii i Wenerologii Gdańskiego Uniwersytetu Medycznego w latach 2004–2013. Przeanalizowano dane demograficzne, rodzaj zmian skórnych, parametry laboratoryjne oraz zastosowane leczenie. Celem badania była analiza częstości i rodzaju reakcji polekowych spowodowanych lekami stosowanymi w kardiologii.

Wyniki. Znaleziono 29 przypadków reakcji nadwrażliwości spowodowanych stosowaniem różnych leków kardiologicznych. U większości chorych wystąpiły pokrzywka — jako jedyny objaw lub z towarzyszącym obrzękiem naczynioruchowym (11) — pemfigoid polekowy (9) i wysypka plamisto-grudkowa (6). U 1 chorego stwierdzono zespół Stevensa-Johnsona (SJS), a u 2 chorych rozpoznano zapalenie naczyń. Do leków powodujących działania niepożądane należały: inhibitory konwertazy angiotensyny, diuretyki pętlowe, inhibitory wapnia, metoprolol, statyny, kwas acetylosalicylowy, tiklopidyna, molsydomina, doksazosyna i enoksaparyna. W niniejszym badaniu przedstawiono trzy reakcje nieopisywane dotychczas w literaturze: pemfigoid indukowany chinalaprilem i torasemidem oraz SJS w związku ze stosowaniem enalaprilu. Leczenie wszystkich chorych obejmowało w pierwszej kolejności odstawienie leku, który przypuszczalnie wywołał działania niepożądane, oraz (u wszystkich poza 1 chorym) zastosowanie odpowiedniego leczenia farmakologicznego obejmującego: doustną steroidoterapię, preparaty przeciwhistaminowe oraz, w przypadku pemfigoidu, dodatkowe leczenie immunosupresyjne. U wszystkich chorych uzyskano ustąpienie objawów ogólnych i poprawę parametrów laboratoryjnych. Objawy skórne ustąpiły w ciągu 7 dni, bez pozostawienia trwałych śladów.

Wnioski. Szybkie rozpoznanie reakcji nadwrażliwości i identyfikacja leku powodującego jej wystąpienie ma podstawowe znaczenie dla chorych. Aby było możliwe skuteczne leczenie zmian skórnych i planowanie dalszego leczenia kardiologicznego, konieczna jest dobra komunikacja między internistami a dermatologami. Choć leki kardiologiczne są stosowane u wielu chorych, to reakcje nadwrażliwości spowodowane przez leki z tej grupy występowały rzadko w całej populacji chorych hospitalizowanych z powodu działań niepożądanych w analizowanym okresie.

Słowa kluczowe: obrzęk naczynioruchowy, kardiologia, wysypka, pemfigoid, zespół Stevensa-Johnsona, pokrzywka

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