Prevention and treatment for allergic reactions with plasmapheresis: a retrospective study of 70 cases.

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Introduction and aim

Plasmapheresis is known as being easy to cause an allergic reaction for using a large amount of blood products. However, effective prevention and treatment for allergic reactions with plasmapheresis has not been established. The aim of the present study is to analyze incidence, effective preventions and effective treatments of allergic reactions.

Method

▪Patients
We enrolled 70 cases (52 patients, 263 times) who were treated by plasmapheresis in the hospital from January 2014 to November 2016.*(Table.1)*

▪Plasmapheresis
Plasmapheresis was performed by each diseases*(Table.2) and under the condition described.(Table.3)*

▪Data collection
Clinical data were retrospectively collected from hospital records. We investigated the presence or absence of allergic reaction in the cases. The methods of prevention for allergic reactions are as follows: prior administration of steroids, immunosuppressant drug, antihistamines and glycyrrhizin. And, the methods of treatment for allergic reactions are as follows: slowed exchange speed and/or prior administration of steroids, immunosuppressant drug, antihistamines and glycyrrhizin.

▪Statistical analysis
The therapeutic effect was analyzed by using Pearson's chi-square test by JMP pro version 12.1.

	n=70
Male:Female (No./%)	37(53):33(47)
Mean age(years old)[range]	46.6[23-85]
BMI (No.)[range]	20.7[12.9-33.3]
Allergic history(%)	29
Laboratory data[range]	
Alb(g/dl)	3.4[1.6-5]
AST(U/l)	125.8[6-4724]
ALT(U/l)	127.6[3-6330]
BUN(mg/dl)	36.8[6.6-111.5]
Cr(mg/dl)	2.8[0.22-12.1]
CRP(mg/dl)	2.1[0-19.4]
WBC(/μl)	9507.8[1920-42800]
Hb(g/dl)	10.4[3.7-16.2]
Ht(%)	30.9[11.3-42.6]
Plt(/μl)	15.7[1-35.3]
Eosinophil(/μl)	69.6[0-698.9]

Primary disease(n=70)	No.(%)
Recurrent nephritis(Focal glomerulosclerosis)	27(38.6)
Acute liver failure	8(11.4)
Transplanted kidney rejection	7(10.0)
Thrombotic thrombocytopenic purpura(TTP)	5(7.0)
Fulminant hepatits	4(5.7)
Transplanted heart rejection	3(4.2)
Rapidly progressive glomerulonephritis(RPGN)	2(2.9)
Acute pancreatitis	2(2.9)
Systemic lupus erythematosus(SLE)	2(2.9)
Chronic inflammatory demyelinating polyneuropathy(CIDP)	2(2.9)
Kidney transplantation	1(1.4)
Liver transplantation	1(1.4)
Antiphospholipid antibody syndrome(APS)	1(1.4)
Postoperative hepatic failure	1(1.4)
Macroglobulinemia	1(1.4)
Drug intoxication	1(1.4)
Morvan's syndrome	1(1.4)
Proliferative glomerulonephritis with monoclonal IgG deposits(PGNMID)	1(1.4)

	n=263
Aparatus	KPS8800Ce
Plasma separator: (No./%)	OP-05W:OP-08W=53(20):210(80)
Anti-coagulant: (No./%)	Heparin:Nafamostat mesilate=171(65):92(35)
Mean FFP dose(U)[range]	35.8[20-44]
Mean blood flow(ml/min)[range]	99.8[80-120]
Mean starting exchange speed(ml/min)[range]	23[13-25]

Table.1 Table.2
Table.3

Result

A total of 70 hospitalized cases (52 patients, 263 times) were included in the study. 56/70 cases patients (80.0%) were administered medication beforehand: Steroids 53/70 cases (75.7%), immunosuppressant drug 42/70 cases (60.0%), antihistamines 27/70 cases (38.6%) and glycyrrhizin 29/70 cases (41.4%). There were 33/70 cases (47.1%) with allergic reactions in treatment period. The most common side effect was skin symptom: 26/33 cases (78.8%). *(Fig.1)* There was no significant difference in the rate of occurrence of allergic symptoms between the group administered with steroid or immunosuppressive agent and the group not administered ($p = 0.99$, 0.92, respectively). There was a significant difference between antihistamine and glycyrrhizin administered group and non-administered group ($p < 0.01$, $p < 0.01$, respectively). *(Fig.2)*Treatments for allergic reactions were done in 22/33 cases (66.7%): steroids 12/33 (36.4%), antihistamine 12/33 (36.4%), glycyrrhizin 6/33 (18.2%) and deceleration of exchange rate 10/33 (30.3%). A total of 25/33 (75.8%) cases improved allergic symptoms. Although, there was no significant difference between each treatments and no treatment group ($p = 0.53$, $p = 0.23$, $p = 0.25$, $p = 0.38$, respectively). *(Fig.3)*

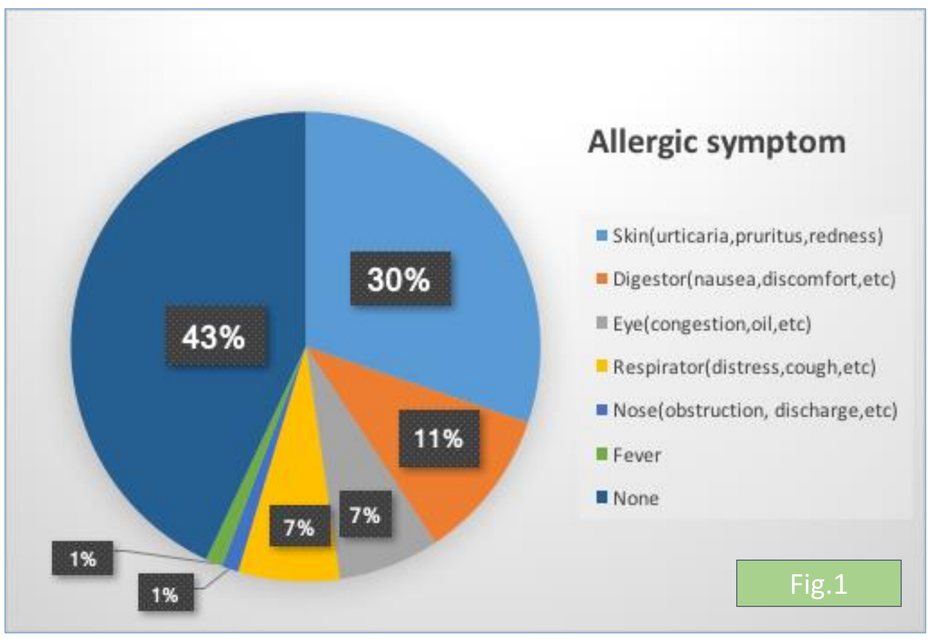

Fig.1

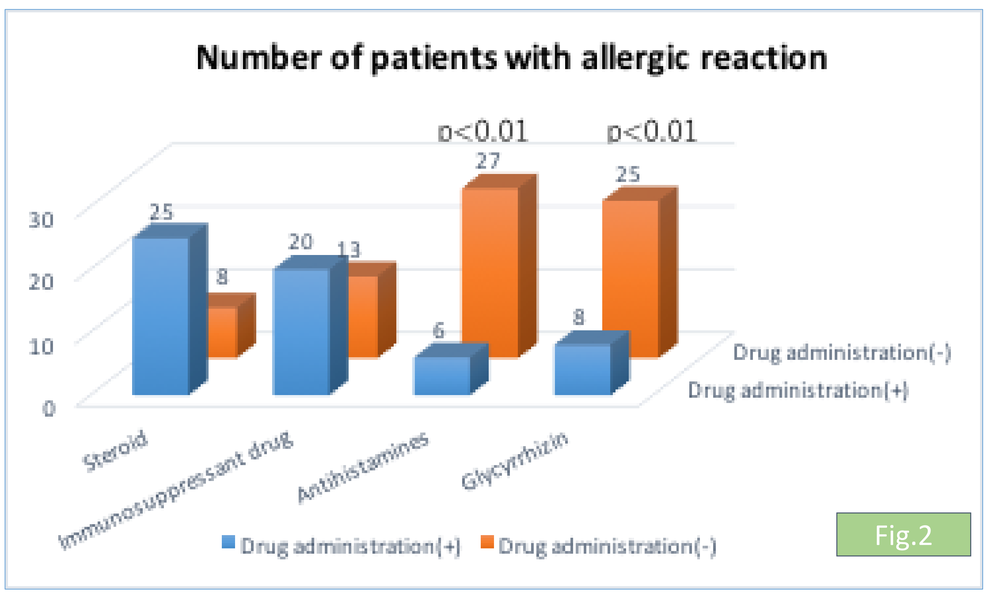

Fig.2

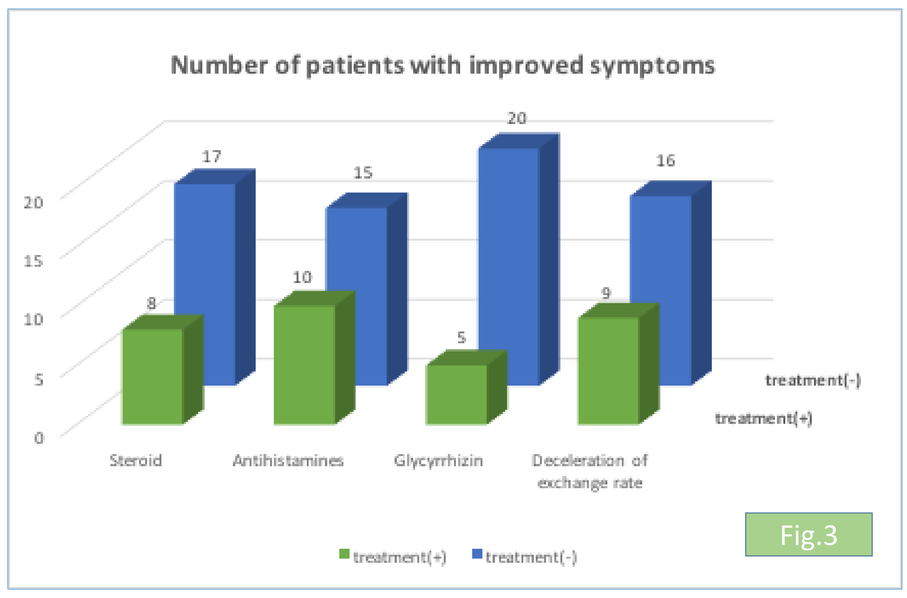

Fig.3

Reference

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Conclusion

Nikolina et al. reported that the most common complications of plasma exchange were paresthesia (2.7%) and urticaria(1.6%)[1]. Shemin et al. also reported that the most common complications with FFP were urticaria (17%) and pruritus (13%)[2]. Adverse reactions are associated more commonly with the administration of fresh-frozen plasma[3]. In this study, the skin symptom was 30%. It was almost the same result. Although there is a paper on the incidence of allergic reaction in plasmapheresis, there are not many papers on how to prevent or treat allergy reactions in plasma exchange. This study showed that prior administration of antihistamine and glycyrrhizin may decrease the incidence of allergic reactions during plasmapheresis. Effective treatment for allergic reactions was still unclear and further study in more patients are needed.

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