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Original Article

Perspective and awareness about sources and benefits of Monoclonal Anti-Bodies among medical students

Samina Alam, Huma Dilshad, Jamila Khatoon Qasmi, Syeda Arshmah Imran, Aisha Minhal, Sobia Shafqat, Syeda Ailiya Zaidi, Saima Alam, Irfan Alam

Department of Pharmaceutics, Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan

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ABSTRACT

Objective: To investigate the level of awareness about sources and benefits of Monoclonal anti-Bodies among medical students. Monoclonal anti-bodies are the immunoglobulin that is produced from clones of B- cells i.e. their parent cells.
Methods: A cross-sectional survey of medical students aged 20-30 years from the different universities of Karachi selected by convenient sampling method, conducted from august to September 2019. Data was collected through a self-administered questionnaire.
Results: We have carried out a survey among medical students regarding their awareness, on mono clonal anti-bodies and 300 responses were collected approximately, these antibodies are used for different purposes such as, cancers, auto immune diseases and cardio vascular diseases. Further, these mAb are preferred for their easiness in measuring and are highly reproducible.
Conclusion: From the results of our survey we concluded that majority of the students were aware about what are mAb, their uses, advantages and from what sources they are derived from.

Keywords: Monoclonal antibodies, vascular diseases, immunoglobulin, survey

Address for Correspondence: Samina Alam, Department of Pharmaceutics, Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan;

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INTRODUCTION

Monoclonal antibodies (mAb or moAb) are indistinguishable immunoglobulins, produced from a solitary B-cell clone. These antibodies perceive remarkable epitopes, or restricting locales, on a solitary antigen.[1] Deduction from a solitary B-cell clones and resulting focusing of a solitary epitope is the thing that separates monoclonal antibodies from polyclonal antibodies. Given practically any substance, it is conceivable to create monoclonal antibodies that explicitly tie to that substance; they would then be able to serve to distinguish or cleanse that substance.[2] This has become a significant device in organic chemistry, atomic science, and drug. [1,3] Monoclonal counter acting agent age starts in the very same way as polyclonal neutralizer age, with the making of a vigorous resistant reaction.[4] Be that as it may, as opposed to gathering host serum to recoup a populace of polyclonal antibodies, monoclonal counter acting agent age requires assortment of the phones that make antibodies, lymphocytes.[5] Once gathered, lymphocytes are deified, built up as clonal through restricting weakening, screened for suitable articulation, extended and safeguarded. [2,6] Advances in clinical immunodiagnostics coming about because of the utilization of hybridoma innovation are beginning to show up.[7] Monoclonal antibodies are starting to uproot their out of date forebears, polyclonal antisera, in numerous features of immunology.[8] Their homogeneity, explicitness, and accessibility make hybridoma-determined antibodies the immunological reagents of things to come in immunoassays, immuno-liking chromatography, immunotherapy, and territories yet to be characterized. [3,9] The utilization of monoclonal antibodies to treat illnesses is called immunotherapy treatment on the grounds that each sort of monoclonal neutralizer will focus on a particular focused on antigen in the body.[10] The diseases treated by monoclonal antibodies include cancer, rheumatoid arthritis, multiple sclerosis, cardiovascular diseases, Crohn's disease etc. [4,11]

METHODOLOGY

A cross-sectional survey of medical students aged 20-30 years from the different universities of Karachi selected by convenient sampling method, conducted from august to September 2019. Data was collected through a self-administered questionnaire. This is a survey based study about the awareness of monoclonal antibodies in the medical students. Samples were collected from different students that belong to medical field. Particularly, undergraduates of pharmacy. They were asked whether they know what monoclonal antibodies are, their uses, and their route of administration, their side effects and why these antibodies are preferred? Etc.

RESULT

We have conducted a survey on the awareness of monoclonal antibodies among medical students, in which majority of them belongs to pharmacy. The majority of students i.e. 74% were aware of what is monoclonal antibodies and 25% have the knowledge that mAb are clones of parent cells.(figure 1), Further, the next question was asked about the idea that where these mAb are derived from? That less than 50% were aware that they are derived from both i.e. from human and mouse. Furthermore, the next question was asked about the awareness of what diseases mAb can be treated? Different kind of answers was obtained. 68% people know that different types of cancer can be cured by this, 26% and 32%students weren't familiar about the mechanism of these antibodies and that it can be used with combination with hormone and chemotherapy respectively. Many of the students were aware about the advantages of mAb. (table 1)

Table 1 Close ended questionnaire related to the awareness of monoclonal antibodies

CLOSE ENDED QUESTIONNAIRE						
S.No	**Questions**	**Options**				
1	What diseases mAb can cure	cancer	Cardiovascular diseases	Autoimmune diseases	Skin related diseases	All of the above
	Response	42%	8%	38%	0 %	40 %
2	Different types of cancers that can be treated. by mAb	Breast cancer	Lung cancer	Stomach cancer	Brain cancer	All of the above
	Response	16%	8%	6%	12%	68%

3	Preferred route of administration.	intravenous	Intramascular	Subcutaneous	Interadermal	All of the above
	Response	54%	6%	4%	3%	33%
4	Side effects of treatment	Nousea and vomiting	Allergy	Congestive heart failiur and internal bleeding	fever	All of the above
	Response	16%	12%	24%	13%	35%
5	Advantages of treatment	highly reproducible	Easily measurable	Both	uncomplicated	None of above
	Response	26%	14%	55%	5%	0%

DISCUSSION

From our study we have concluded that medical students have the idea about the monoclonal antibodies. When asked about what diseases mAb treat so, only 40% of students know that it can cure infection, cardiovascular diseases, cancer, and autoimmune diseases. Whereas, 42% students thought it can only cure cancer respectively. Monoclonal antibodies can treat variety of cancers. So we asked similar questions from the students in which majority of them that are 68% were aware from the correct answer. While, the other percentage of students thought that only specific cancers can be treated. Another question was asked about the preferred route of an administration of mAb which is intravenous and 54% people were sure about it. While, other parenteral routes which includes an intra-dermal, subcutaneous, and intra muscular, got remaining percentage of awareness , respectively, consider these routes as a right answer and some of them also thought that all the mentioned above routes are preferred. Moreover, we asked about the side effects due to monoclonal anti-bodies, which includes, both common and serious side effects that are nausea, vomiting allergy, fever. Congestive heart failure, and bleeding respectively and 35% person were aware that all of the above side effects may be caused by mAb. We ended our survey with the question about the advantages of monoclonal anti-bodies which were highly reproducible and easily measureable. 55% of undergraduate's students have the knowledge about the advantages.

CONCLUSION

The inspiration following this assessment was to collect statistics about the level of knowledge, awareness related to the sources, treatments, route of administration and most importantly benefits of the monoclonal antibodies among the medical students of our society. From the results of survey we concluded that majority of the students were aware about what are mAb, their uses, advantages and from what sources they are derived from.

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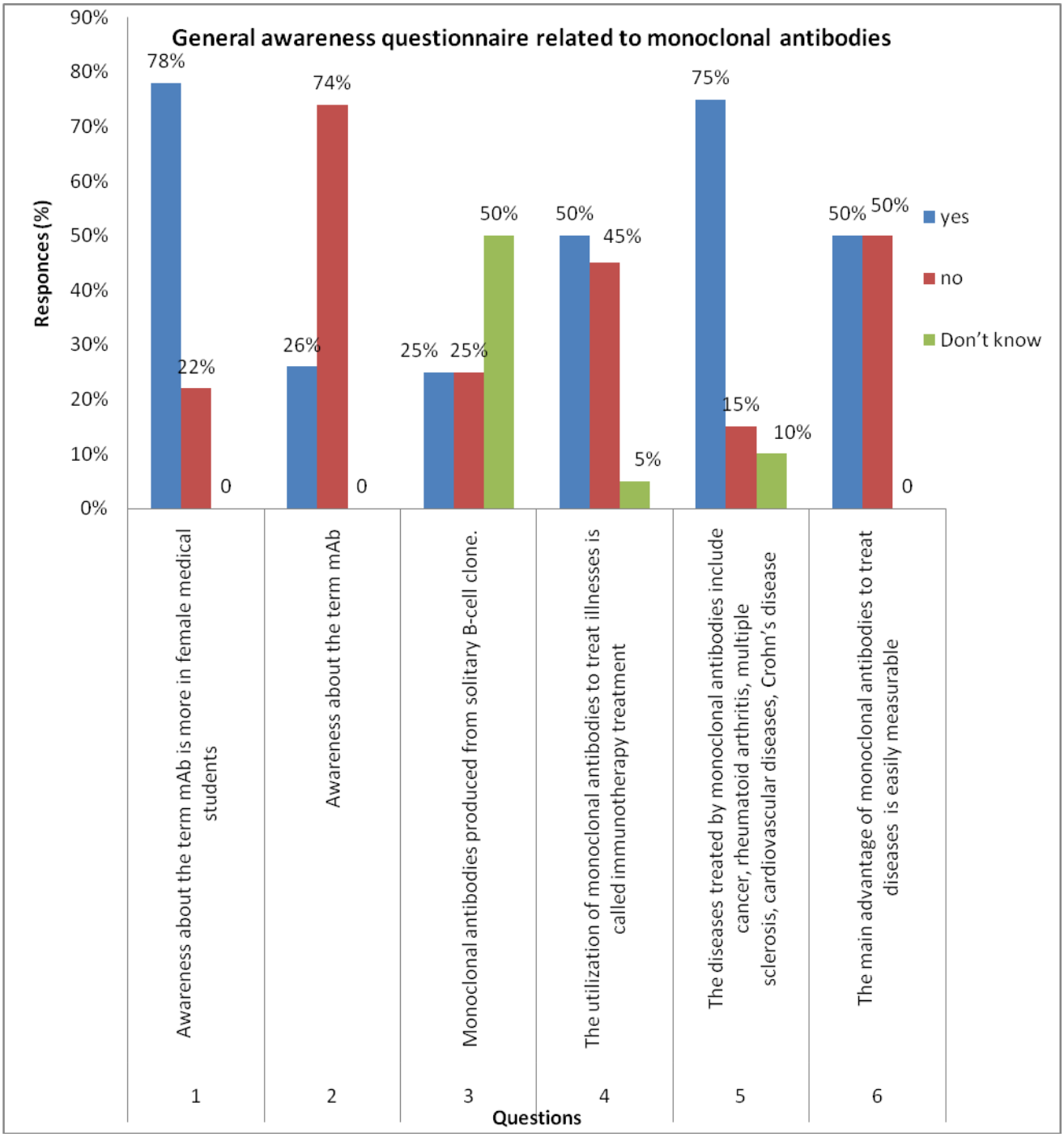

Figure 1General awareness open ended questionnaire related to monoclonal antibodies