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Original Article

Evaluation of medical drug and herbal product use before anesthesia

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Abstract: We aimed to determine the prevalence of herbal product and medical drug use among preoperative patients. Patients over the age of 18 applied for preanesthetic evaluation were directly asked by anesthesiologists if they were using any drug. Patients were also asked whether they use any herbal product. We also asked patients whether they know the side effects of herbal product or any drug they have used. 898 surgical patients were evaluated in the anesthesia assessment unit before surgery for a 3-month period. 43.4% patients were taking medical drugs. 9.5% patients reported taking herbal products and 21 of those patients were consuming more than one. 33 of all patients were using both medical drug and herbal product. The most commonly consumed herbal products, in descending order of frequency, were green tea (n=29), lime (n=20), garlic (n=8), ginger (n=7) nettle (n=7) ve daisy (n=5). 375 patients reported using medical drug in the initial assesment. Whereas only 4 patients reported consuming herbal product in the initial assesment. 38 (9.7%) of patients using medical drug and 3 (3.5%) of patients using herbal product said that they know the side effects of drugs. Usage of herbal product is common among patients undergoing surgery. Anesthesiologists should be aware of the herbal use because the patients may not give information about herbal consumption. Most commonly used herbal products may vary according to regions. Most of the patients do not know the side effects of both medical drug and herbal products.

Keywords: Herbal products, anesthesiology, side effects, surgery

Introduction

It is important to determine the drugs used by patients scheduled for surgery during preoperative anesthetic evaluations. Thus, adverse effects of drugs and drug interactions during anesthesia may be prevented by taking necessary precautions [1].

Herbal product is commonly used in Turkey as it is around the world. Unfortunately, only a small amount of herbal products is supplied by pharmacy. Herbal products are used as an alternative or complementary medicine to medical treatment, because the patients consider that these products are natural and do not have any side effects [2, 3]. Every day new herbal mixtures are placed on the market due to the growing herbal medicine market. Currently, approximately 120 licensed herbal medicines are sold in pharmacies in our country.

Drug pharmacokinetics can be effected by age, pregnancy and chronic diseases. Beside this, an addition of herbal product to patient currrent medication that consists of multiple drugs may increase side effects and drug-drug interaction risks [4].

Herbs as gingko biloba, ginseng, kava kava, St. John's wort and garlic are widely consumed in various countries. The importance of drug interactions and side effects of these herbs has taken place in anesthesia books and guidelines [5]. Further studies are needed to be carried out to determine herbal products consumed daily in different countries. Thus, knowledge about these product may be enriched [6, 7]. Herbal remedies are consumed as food and/or drink in Turkey and these herbs can vary according to regions of our country [8].

The objectives of this study are to investigate the medical and herbal drug use and to identify

Table 1. Medical drug and herbal product use according to sex and educational status

			Educational status					
			Not literate	Literate	First school	High school	University	Total
Medical Drug	Female	n	62	12	122	16	19	231
	Male	n	4	2	117	17	19	159
	Total	n	66	14	239	33	38	390
Herbal Product	Female	n	2	2	24	11	13	52
	Male	n	0	0	20	6	8	34
	Total	n	2	2	44	17	21	86

Table 2. Medical drug and herbal product use according to age

			Age Groups					
			<30	31-40	41-50	51-60	60<	Total
Medical Drug	Yes	n	25	36	80	390	158	390
	No	n	186	117	102	508	36	508
Herbal Product	Yes	n	23	10	21	86	15	86
	No	n	188	143	161	812	179	812
	Total	n	211	153	182	898	194	898

Table 3. Medical drug and herbal product usage rates according to questioning

		1th Questioning	2nd Questioning	Total
Medical drug	n	375	15	390
	%	96.2	4.8	100
Herbal Product	n	4	82	86
	%	4.7	95.3	100

awareness and knowledge level about side effects of drugs among patients scheduled for surgery.

Materials and methods

Following approval by the University of Erciyes Research and Ethics Committee, (18.06.2013 No: 2013/416) this survey was conducted in Ahi Evran University Training and Research Hospital during a 3-month period (July 2013-September 2013). Patients over the age of 18 who applied for preanesthetic evaluation before surgery were included. Written informed consent was obtained from all patients Preoperative anesthetic evaluations were made by anesthesiologists. The patients were asked to indicate if they were using any drug. After initial assesment, patients were asked whether they use any herbal product. We also recorded whether the patients aware of the side effects of herbal medicine or any drug they have used. All patients were also given recommendations about discontinuation of all herbal products two weeks prior to the surgical procedure. Reference and source of herbal products were also asked and noted. Patients using irregularly or rarely herbal medicine were excluded from the study.

SPSS 16.0 (SPSS Inc., Chicago, IL, ABD) was used for statistical analyses; data were expressed in numbers and percentages and Chi-square was used for comparisons. A *P* value of <0.05 was considered statistically significant.

Results

A total of 898 patients were evaluated between July 2013 and September 2013. 51.6% (n=463) of all patients were female and 48.4% (n=435) were male. Mean age of male patients used medical drug was 58.6±15.7, female was 54.1±14.9 years. Mean age of male patients used herbal product was 51.4±17.3, female was 39.8±12.9 years.

Three hundred and ninety (43.4%) patients were taking medical drug and 207 of these patients were taking more than one. Eighty six (9.5%) patients reported to use of herbal product and 21 patients were taking more than one herbal medicine.

In this study, 33 patients were taking both herbals and medical drug. Twelve patients using antihypertensive drugs and 3 patients using antiagregan drugs reported to consume also herbal product.

The most commonly used herbs were green tea (n=29), lime (n=20), garlic (n=8), ginger (n=7) nettle (n=7) ve daisy (n=5). In addition, we determined that oleaster juice, yellow pine root, reeds root, flax seed, thyme juice, mate tea, polpala tea and other mixture of form teas are used for medicine.

Reference and source of herbal products were close relative (n=31), friend (n=23), spice market (n=16) and internet-television-newspaper (n=4). 2 patients were taking herbal product by doctor's recommendation.

Table 1 shows the relation between drug (herbal and medical) use and sex and educational status. The distribution of medical drug and herbal product use according to age groups is listed in **Table 2**. There was a statistically significant difference between medical drug use and age ($P<0.05$), but there was no statistically significant difference between herbal product use and age ($P>0.05$).

In the first questioning, medical drug and herbal product usage rates among the patients were reported as 96.2% (n=375) and 4.7% (n=4) respectively (**Table 3**).

9.7% (n=38) of patients taking medical drug and 3.5% (n=3) of patients taking herbal product were unaware of the side effects.

Discussion

There has been increasing concern about usage of herbal products in our country as well as all over the world. It was reported that mortality and morbidity can be increased due to either the use of herbal medicines or their interactions with the other drugs [9, 10].

Some studies in the literature have reported use of herbal medicines by spesific groups of patients. The results of this study show that herbal product use occurs among patients for anaesthesia. It was reported that the rate of herbal medicine use was 62% in patients with breast cancer [11] and it was 53% in patients with hypertension [12]. In our study, the frequency of herbal medicine use is lower compared to these studies. However, Kaye et al. [13] investigated the extent of herbal medicine use in patients during preanesthetic evaulation and they found also low ratio (32%). In another study, 2723 patients were questioned and 4.8% of patients reported the use of herbal medicine [14]. In addition, Iyilikci and collagues showed that 50.9% of respondents reported to use of herbal medicine [15]. In other studies herbal products were used by the 22% and 17.4% of patients [16, 17]. In a survey carried out in the pediatric age group it was found as 32% [18].

A number of studies conducted in different countries have shown use of popular herbs like Garlic, Gingko biloba, St. John's wort, Ekinezya, Ginseng, Efedra, Kava kava and Valerian root [7, 9, 19]. In descending order, green tea, lime, garlic and ginger were most commonly used herbal products in our study. Furthermore, we determined that oleaster juice, yellow pine root, reeds root, flax seed, thyme juice, mate tea, polpala tea and other mixture of form teas are used as medicine. A study by Kaye and colleagues reported most commonly consumed herbal products as garlic, gingko biloba, St. John's Worts, efedra, ekinezya, aloe vera, cascare and licorice respectively [13]. Skinner et al. found that garlic, ginseng, gingko biloba, St. John's wort and echinacea was the most commonly used herbal products [14]. Tsen et al. reported that echinacea, gingko biloba, St. John's wort, garlic, and ginseng were found to be most commonly used respectively [16]. In addition, Meyer et al. determined that gingko biloba, garlic, ginseng, St. John's wort and echinacea were commonly used [17]. In our study, green tea was found to be the most commonly used herbal product. Green tea can react with vitamin K, may reduce the anticoagulan effect of warfarin and plasma levels of folic acid and statins. It has minimal effect on CYP3A4 enzyme activity in the liver and the gastrointestinal tract [20]. Ginger which was determined to be also commonly used in our study, may increase the effect of coumadin and result in prolonged bleeding [20]. Unfortunately, we could not reach any relevant information about the other herbs used by our patients in the literature. Additionally garlic was also reported to use by some patients in this survey. Garlic (Allivum sativum) active components can inhibit platelet aggregation and may also increase the effects of other platelet aggregation inhibitors. It may change the blood levels of drugs such as warfarin and paracetamol. For this reason, garlic should be discontinued at least one week prior the operation [7, 9].

On the other hand, Gingko biloba, Echinacea, Ginseng, St. John's wort, Kava kava and Valerian root are the other popular herbs. But these products were not found to be used in our study. However these products should be discontinued prior the surgery. Because these products some adverse effects like inhibition of platelet aggregation, immunsupression, prolon-

gation of the anesthetics effect, in warfarin, cyclosporine, benzodiazepines and digoxin levels by the induction of cytochrome P450, hypoglycemia, hypertension and interaction with the digitalis and other cardiovascular drugs [7, 9].

Herbal products are used alone or with a medical drug as supplementary medication. In our survey we found that twelve of patients receiving antihypertensive drug and three of patients taking antiplatelet drugs use also herbs. Especially garlic, commonly used herbal, is known to react with antihypertensive and antiplatelet drugs [9, 10]. Anesthetic drug induction may cause an adverse reaction in case of prior both herbal product and/or medical drug consumption. Meyer and colleagues reported that almost half of the patients who were found to be used herbal medicine indicated multiple herbal product use ranging from 2 to 12 products [17]. In our study, the rate of multiple herbal medicine consumer was lower compared to Meyer' survey.

Persistent questioning for getting information about herbal medicine usage among patients is very essential for anesthesiologist and also surgeons [20, 21]. In the majority of studies about the herbal product use it was showed that most of the patients did not report the use of herbal product [11, 12, 18]. Additionally in our study, the rate of patients who reported the use of herbal products was found to be low in the first questioning. Patients do not want to report or give any information to clinicians about the use of herbs, although they use these products for their treatment.

The rate of patients reported to aware of the side effects of herbal products was found to be very low similar with Iyilikci' [18] study. Also the rate of patients reported to aware of the side effects of medical drugs was found to be lower in our study. Patients only scheduled for surgery were evaluated in our study. However many patients consume herbal products in their daily lives are at risk, because they do not know about adverse effects of herbs and they don't usually provide any information to clinicians.

Conclusion

Our study showed that most of patients undergoing surgery are using herbal products. Anesthesiologists should ask patients persistantly about their use of herbal products in preoperative evaluation because patients may not give any information to clinicians. Anesthesiologists should also document a full drug history, including the use of herbal products in every surgical patient. Surgical procedure should be delayed for two weeks for patients using herbal product alone and/or with medical drug as mentioned in the guidelines. However, it remains that many patients will still be using herbal products before surgery because they are unaware of this recommendation. In addition books and guidelines should be updated because the most commonly used herbal products may vary according to countries and regions.

Disclosure of conflict of interest

None.

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