

## Extracorporeal shock-wave lithotripsy and garlic consumption: a lesson to learn

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**Abstract** The first case of a kidney haematoma after extracorporeal shock-wave lithotripsy (SWL) in a patient with nephrolithiasis who was taking aged garlic extraction is reported. Patient was treated conservatively without the need of any intervention. Urologists should be aware that herbal products including garlic, ginkgo, and ginseng have been associated with potential increased bleeding. The present case emphasises the need to specifically seek out a history of herbal use in presurgical patients. It is suggested that herbal medications should be discontinued up to 15 days prior to urologic surgery or SWL to minimise the risk of complications.

**Keywords** Extracorporeal shock-wave lithotripsy · Garlic · Bleeding · Herbal medicines

### Introduction

An increasing number of alternative health care products (defined as “over-the-counter,” nonprescribed herbal medicines) are taken by patients for a variety of reasons. Patients do not consider herbal remedies prescribed by naturopathic providers or bought at supermarkets as “real medications” and as a consequence, it has been noted that 70% of patients failed to disclose herbal use to their allopathic practitioners or hospital personnel [1]. It is also

believed that herbal medications are safe, therefore, potential side-effects and drug interactions caused by complementary medicines are not anticipated. However, herbal medicines including garlic, ginkgo, and ginseng have been associated with potential increased bleeding [2–4].

We report a case of a renal haematoma after extracorporeal shock-wave lithotripsy (SWL) that occurred as a result of excessive odourless garlic ingestion. To our knowledge this is the first report of post-SWL haematoma induced by garlic.

### Case report

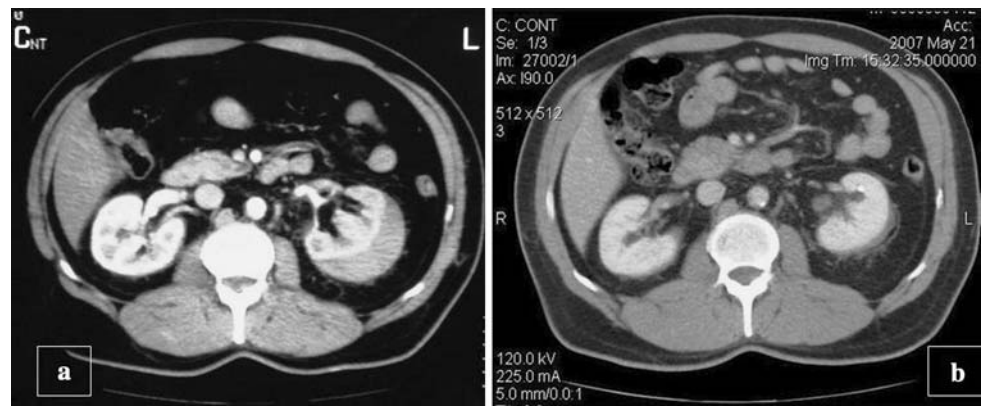
A 51-year-old man experienced an episode of colic pain. Evaluation with a KUB X-ray and ultrasound revealed the presence of a radiopaque renal stone with a diameter of 11 mm without any significant dilatation of the upper urinary tract. The patient was scheduled for in situ extracorporeal SWL. From his history only hypercholesterinemia was noted that was being managed with diet. The patient was asked if he was taking any kind of drugs including aspirin, coumarin and anticoagulants, but no medication or allergy was reported. Pre-SWL routine investigation included complete blood count, serum creatinine, prothrombin time (PT), and activated partial thromboplastin time (aPTT), urine analysis and culture. All blood and urine tests were normal and patient underwent SWL 1 week later. During lithotripsy patient experienced mild pain that was tolerated without the need for any kind of sedation or analgesia. In total, the patient received 3,000 shocks with a maximum intensity of 60% (Dornier S Lithotriptor II, Dornier MedTech System GmbH, Wessling, Germany). In the afternoon, the patient came to the Emergency Department

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**Fig. 1** **a** CT shows the hematoma of the left kidney after SWL. **b** Five months later, CT shows remission of the hematoma



due to severe pain that did not respond to the routinely prescribed pain-killers. Ultrasound investigation revealed a haematoma of the left kidney and patient underwent a computed tomography (Fig. 1a) that confirmed the presence of  $6 \times 5 \times 4$  cm haematoma. A drop of 3 g/dl in the haemoglobin from the pre-SWL value was found. Patient was admitted and treated conservatively with fluids and antibiotics. Patient's history was reviewed and he finally disclosed that he was taking 600 mg of aged garlic extraction (in form of 600 mg tablets being sold as a biological product) twice a day during the last year to reduce total cholesterol but he did not previously mention it since he did not consider garlic to be a medication. The platelet function analyser test (PFA-100, Dade-Behring) was performed and it showed a prolonged collagen and epinephrine (C-EPI) closure time, without prolongation of the collagen and ADP (C-ADP) closure time. The patient was finally discharged 5 days later in stable condition without the need of surgical intervention or transfusion. Five months later, a CT showed a remission of the haematoma (Fig. 1b).

## Discussion

Garlic is one of the most studied medical plants. Meta-analyses have demonstrated that garlic has potential beneficial effects in controlling blood pressure and reducing total cholesterol, and doses used in these studies were well tolerated [5]. Garlic also seems to inhibit platelet aggregation in a dose-dependent fashion [3]. Studies revealed that patients who consumed 600 mg to 900 mg of garlic every day did appear to have a higher incidence of prolonged bleeding than patients who did not ingest garlic every day [2]. However, some studies failed to demonstrate an effect of garlic on bleeding parameters. Scharbert et al. [6] found that platelet function was not impaired by single and repeated oral consumption of a dietary dose of garlic in healthy volunteers. They concluded that socially acceptable doses of raw garlic are unlikely to increase the risk of

perioperative bleeding [6]. Beckert et al. [7] showed that administration of garlic to ten adult volunteers for 2 weeks had no effect on platelet function *in vivo*. Nevertheless, the authors admitted that review of the literature showed that there was substantial scientific evidence to implicate garlic as a potential cause of bleeding [7]. Plausible explanations for these controversial results may include the dose and total time of garlic administration. In the present report, the patient was taking 600 mg of aged garlic extraction twice a day during the last year. Moreover, not all garlic preparations can be assumed equivalent in their composition due to the lack of standardization with the manufacturing of herbal supplements. Therefore, their biological response cannot be predicted [2]. In addition, full pharmacokinetic facts about garlic are still not known.

Although, it is difficult to prove whether the haematoma was caused by the SWL itself or the consumption of herbal supplements, we believe that in our case garlic consumption significantly contributed to the occurrence of this extensive haematoma. Arguments for this position include the lack of any other underlying causative factor (i.e. age, hypertension), the fact that our patient was a heavy garlic user and the finding of the abnormal PF-100 test that indicated garlic's anticoagulatory effects.

A bleeding episode that eventually required a blood transfusion has previously been described in a 72-year-old man who underwent transurethral resection of the prostate [8]. The patient was taking no medications before TURP except regular intake of garlic tablets for many years. Other surgical specialties have also reported adverse events associated with garlic consumption. Spontaneous haematoma around the spinal cord that resulted in temporary paraplegia occurred in an 87-year-old man after consumption of four cloves of garlic per day for an unknown period of time [9]. The bleeding episode was believed to be associated with platelet dysfunction that was reflected by prolonged bleeding time. Another episode was reported in a woman undergoing an augmentation mammoplasty [10]. A large clot had to be evacuated and the poor haemostasis

was also attributed to garlic ingestion. A case of bilateral retrobulbar haemorrhages during strabismus surgery occurred in a 54-year-old woman as a result of excessive odourless garlic ingestion prescribed by a naturopath [11]. On the day prior to surgery she had consumed five tablets (approximately 5 g of equivalent fresh bulb). Upon discontinuation of garlic, no further episodes of prolonged bleeding were reported. Currently available data suggest that garlic ingestion should be discontinued 7–15 days before the scheduled treatment [2–4].

Use of herbal and dietary supplements is extremely common in USA. Tsen et al. [12] demonstrated the use of herbal remedies in 22% of patients who underwent pre-operative evaluation. In a similar survey, Kaye et al. [1] found that 32% of patients in an ambulatory surgery setting reported use of herbal medications. More than 70% of these patients did not reveal such use to their physicians [1]. In Europe, it seems that fewer patients are taking herbal remedies when compared with USA. A survey of patients presenting for anaesthesia was performed in UK and showed that 4.8% of the surveyed patients were taking one or more herbal remedy [13]. The rapid growth of herbal supplement use (by approximately 20% per year in USA), has important implications for the practice of surgery and the performance of any interventional procedures.

Information about ingestion of herbal medications is difficult to obtain from patients because they do not consciously consider them as medicines or as being relevant to their medical care [3]. It has also been reported that patients may not be forthcoming about the use of herbal medicine because they fear censure [4]. Therefore, it is necessary for urologists to specifically enquire patients about the use of these agents in the preoperative assessment.

## Conclusion

In conclusion, urologists should be aware of these herbal products and their potential adverse effects and drug

interactions. Many of these products prescribed by alternative medicine physicians or purchased over the counter should be discontinued up to 2 weeks prior to urologic surgery or SWL to minimize the risk of complications.

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