

Common Complications and Adverse Reactions in a Mesotherapy Practice

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At the first training seminar, a student mesotherapist may learn that mesotherapy’s “side effects are limited to minor bruising.” If this is the sum total that the novice knows about complications, he or she will likely encounter problems in practice.

Mesotherapy complications may be broken down into 3 categories: untoward reactions to pharmaceuticals, pigmentation problems, and necrosis.

Allergic reactions to biologicals are seen fairly often. The enzymes hyaluronidase, collagenase, and phosphatidylcholine are the only drugs causing allergic reactions that we have seen. Hyaluronidase can create a wheal and flare reaction of the immediate or delayed hypersensitivity type. In the immediate type, the reaction is seen within 15 minutes and consists of a raised, erythematous wheal that is intensely pruritic. A skin test will reveal this immediate hypersensitivity reaction before the patient undergoes a treatment containing hyaluronic acid. The delayed hypersensitivity reaction to hyaluronidase has the same appearance but may not reveal itself until after multiple treatments. As many *Hymenoptera* contain hyaluronidase in their venom, an allergy to these insects should alert the mesotherapist to the likelihood of a wheal and flare reaction occurring when this ingredient is used. Collagenase hypersensitivity may also be seen either in the immediate post-treatment period or as a delayed reaction. It presents as a series of raised patches that are tender to the patient but not pruritic. Phosphatidylcholine allergy is much less

likely but has been seen after an initial treatment. It appears as a fine, pruritic, maculopapular rash distant from the treated area. In all these allergic instances the reaction responds to parenteral or oral diphenhydramine in dosages of 25-50 mg. A protocol we have used is 25 mg of diphenhydramine every 6 hours for 2 days along with 30 mg of prednisone initially, followed by 5 mg of prednisone every 6 hours also for 2 days. When a patient has an allergy to hyaluronidase, collagenase, or phosphatidylcholine, pretreatment beginning the day before mesotherapy with 5 mg of prednisone followed by 10 mg of prednisone on the day of the treatment has prevented or severely reduced the reactions. Occasionally, in a patient pretreated with corticosteroids, diphenhydramine will also be required following treatments if there is continued pruritus.

Apart from allergic reactions, there are also a number of adverse reactions associated with commonly used mesotherapy drugs. Most are problems only when used in “excessive amounts,” but some can be problematic in certain patients in lesser dosages. Yohimbine is a parasympathomimetic drug that is a presynaptic alpha-2 terminal blocker, thereby inhibiting norepinephrine release.¹ It may increase irritability, nervousness, and anxiety.² In susceptible individuals, this can precipitate reactions mimicking panic attacks. The patient reports that the heart is “racing,” and/or they feel “shaky” or “jittery.” Dosages over 5 mg can cause this type of reaction even in nonsusceptible patients. In hypersensitive individuals, this reaction may be seen in dosages as low as 1 mg. Al-

though isoproterenol is often thought to be the culprit in patients who perceive “palpitations,” is more likely to be caused by yohimbine in cases where both drugs are given. The increased chrono-tropism, inotropism, and hypertension that can be brought on by isoproterenol may be countered effectively with oral propranolol 20 mg for an initial dose, provided that the heart rate will not be lowered adversely. Rarely does this need to be repeated, but the initial dose can be augmented to 40 mg if needed. Parenteral beta-blockers are also an option if the physician wishes to place an intravenous line. When yohimbine is the culprit, good results have been obtained with a single oral dose of temazepam at 15-30 mg, which breaks the anxiety reaction. We have also given temazepam along with propranolol in a few cases and monitored patients carefully in-office with ECG and serial heart rate, blood pressure, and pulse oxygenation for a few hours. In all cases, no further problems presented.

Aminophylline is commonly used in adipose-sculpting mesotherapy formulae. This drug has a narrow therapeutic index with problems encountered at dosages around 250 mg in most patients. Nausea, vomiting and diarrhea are the most common complaints with onset occurring 4 to 8 hours postprocedure.³ When serum levels increase to greater than 20 mg/mL cardiac arrhythmias and seizures are possible.³ Repeated dosages of aminophylline may also decrease serum potassium over time.³ In patients with risk factors for potassium wasting, this electrolyte should be monitored, and any patient experiencing muscle cramping should have this electrolyte assayed immediately. Some mesotherapists will administer a pre-procedure parenteral anti-emetic in select patient populations.

Hyperpigmentation problems status post-mesotherapy procedures have also been noted. In the high-melanin Fitzgerald skin types V and VI, post-inflammatory hyperpigmentation has occurred. Topical preparations containing, singly or in combination, kojic acid, hydroquinone and/or glycolic acid have been helpful in resolving this unfortunate complication over months. Of greater concern, and which may occur irrespective of Fitzgerald skin type, is urticaria pigmentosa. We have seen this only following wheal and flare reactions in the skin. In the resolution of the wheal, a purplish to brownish discoloration appears in the subcutis and remains for months despite all efforts to eradicate it. Over time these have gradually improved, but we have found no way to hasten their

resolution. Hyperpigmentation of any type is not common in our practice, the incidence being 0.87%. Nonetheless, pigmentation problems, although not serious, can be very distressing to patients.

Recently a colleague sent us several photographs of a dermal wound that occurred after a mesotherapeutic procedure performed by an unknown mesotherapist. The wound was on what appeared to be the lateral thigh and was 3 cm across. This wound was covered by a black eschar, which, once removed, revealed full-thickness skin and fatty tissue necrosis. Our supposition is that the necrosis was caused by a larger than commonly delivered aliquot of phosphatidylcholine combined with highly concentrated collagenase. In all likelihood, attention to proper technique could have prevented the wound.

In summary, hypersensitivity reactions are common and easily managed. Adverse drug reactions, although not frequent, may also be anticipated or treated with common-sense protocols. Hyperpigmentation complications are not medically serious, but many patients become concerned when these develop and wish to discontinue treatment. Tissue necrosis is rare, but serious. With attention to appropriate drug selection and delivery protocols, mesotherapists are unlikely to encounter this situation.

As physicians, we must first recognize and acknowledge the risks of using certain medications in mesotherapy. Secondly, we also need to open dialogues with each other about the complications we see so that protocols to avoid as well as treat these problems can be developed and implemented.

References

1. Yeragami VK, et al. Heart rate and QT interval variability: abnormal alpha-2 adrenergic function in patients with panic disorder. *Psychiatry Res* 2003 Dec 1; 121 (2): 185-186.
2. Shepard JD, et al. The anxiogenic drug yohimbine reinstates methamphetamine seeking in a rat model of drug relapse. *Biol Psychiatry* 2004 June 1; 55 (11): 1082-1089.
3. Aminophylline Injection, USP 25mg/mL product insert. Hospira, Inc., Lake Forest, IL 60045.

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