Environmental Survey in the Diagnosis of Allergic Disorders

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A SURVEY of the patient's environment is a necessary although frequent minimized adjunct in the diagnosis of allergic disorders. This involves a consideration and evaluation of possible pertinent allergic offenders in the patient's immediate surroundings. In most practices this information is secured by questioning the patient during the initial interview. However, in the experience of the author, this procedure is unsatisfactory because the patient often is unaware of the details of his environment without preliminary study and thought. Patients, as a rule, do not know the composition of their upholstered furniture, mattresses and pillows; they cannot identify trees and weeds in the neighborhood of their homes; they do not know the exact ingredients of the vitamin pills they take or of the canned food they eat. In a seasonal pollen allergy these details may not appear important, but in an obscure perennial rhinitis, persistent asthma or prolonged atopic eczema, they may be critical.

A more satisfactory method of obtaining the required data, we have found, is to submit a detailed questionnaire to the patient for completion at home after consultation with other members of the family and examination of manufacturers' labels on household articles. The ideal method, one that we have found to be increasingly necessary in our clinic, is that of the physician or a trained member of the staff visiting the patient's home and making a detailed inventory of the environment, searching for allergens which may be related to the patient's complaint. It is the purpose of this paper to outline a systematic method of conducting such a survey and to discuss in some detail the factors involved. The plan outlined in this discussion may be made the basis of a questionnaire for the patient to complete, or may be used as a guide by the person actually making the physical survey.

NEIGHBORHOOD

The location of the house is very important. The house on a busy thoroughfare with much traffic on it will be subjected to invasion by fine dust particles, while one situated in the center of a four-acre wooded tract will be invaded by tree, grass and weed pollens. The author recalls at least one case in which the patients' asthma was immediately relieved when he moved from a neighborhood in the vicinity of a furniture factory. Another patient was cured of a constantly running nose when she moved from a neighborhood near a railroad track along which an average of 12 smoke-belching locomotives passed daily.

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The importance of identifying trees, weeds and grass in the vicinity of the home is well known. Allergic symptoms of one patient were immediately ameliorated when the weeds on a vacant lot adjacent to her home were burned. Another patient with olive tree sensitivity was surprised to learn that the magnificent tree on her front lawn was an olive and was quite pleased when her symptoms disappeared on its removal.

If the patient lives on a farm one must consider the crops planted and should search for rusts and smuts.[6] A farmer with severe hay fever during the threshing season was greatly relieved of his symptoms by hyposensitization with corn smut. Recently the author had occasion to study a farmer with asthma who was found sensitive to an autogenous dust extract prepared from dust collected in his barn. Having the patient avoid the barn as much as possible and treating him with the barn dust produced great relief of symptoms. Animals encountered on the farm, too, should not be overlooked. Last year the author studied a dairy farmer who was exquisitely sensitive to cattle hair. This case posed a problem which was solved by change in occupation.

THE HOUSE

The age and state of repair of the house, the author finds, is a factor which the patient and many doctors overlook. A damp house with decayed wood in its framework is likely to be a cause of trouble especially in mold-sensitive patients.[1] Most patients cannot associate common mildew with their allergy. Some time ago the author interviewed one patient who had traveled and lived in all sections of the country in search of a warm spot where, he felt, his asthma would be better. This patient could not understand why his asthma was worse in Florida until it was pointed out to him that he was sensitive to fungi which were prevalent in that tropical climate. In another case seen by the author, the patient's hay fever was at its worst in the autumn when the heating system of his house was used for the first time. The cause of the disease became obvious when a visit to the home revealed a very damp basement with rotted wood piled up in it and a very efficient forced air heating system which disseminated clouds of fungi into the patient's bedroom. The method of cleaning the house, too, may be a deeply rooted habit and appear unimportant to the patient. Thus an associate reports a miraculous cure in a patient by mere substitution of a vacuum sweeper for a broom.

BEDROOM

After considering the neighborhood and the general aspects of the house, the next step is to examine individually the important rooms within the house.

Because the patient spends more consecutive hours in it than in any other room in the house, our practice is to survey the patient's bedroom first. Dust as an antigen in the production of allergic symptoms is well known,[3] but few people realize that it can be found in such hidden and overlooked spots as tops of windows and door casements, curtains and drapes, the edges of rugs, venetian blinds, pictures, wall brackets, knick-knacks and candelabra. Dust often lurks in the coils of spring mattresses, behind dressers and on steel beds. Our practice has been to inspect the room much as a Navy officer does during his weekly inspection, running a finger over inaccessible and overlooked areas in search of dust. In our experience, the most common hiding places of dust in bedrooms are in the coils of bedsprings and in closets where seldom-used clothes hang.

Wool is another allergen that is common as a cause of allergic symptoms. That blankets are woolen is well known to most patients, but it is not so commonly known that common domestic rugs are made of wool. Both can produce symptoms. One patient recently was relieved of major symptoms by substitution of a cotton rug and removal of several wool sweaters found hanging in the closet. Rug and carpet pads are usually made of cattle and horse hair or of jute. As all are capable of producing symptoms they may have to be eliminated. Chenille rugs often contain cow hair while Chinese and other oriental rugs are combinations of wool, cow hair and even dog hair.

Mattresses, which are usually made of cotton linters, horse hair and pig hair, may cause symptoms in a patient. The common "inner spring" mattress is primarily composed of cotton linters. These are usually inadequately covered and, especially if old, can be the cause of symptoms. Some time ago in our clinic we cultured a series of fragments of cotton removed from inner spring mattresses and obtained almost pure cultures of several fungi.

Pillows, of course, are filled with feathers. The more expensive pillows are filled with down (goose feathers) while the less expensive are filled with varying proportions of chicken, duck and turkey feathers. The age of the pillow should be considered. On exposure of a Petri dish alongside a bed overnight we were able to identify feathers in surprising quantities. Culture of this material on enriched medium resulted in a lush growth of molds. One can readily see what effect a good night's sleep on a soft old feather pillow will have on a patient sensitive to feathers or mold. Kapok, too, we found by similar investigative methods was not only a good allergen, but also an excellent medium for fungus growth.

LIVING ROOM

In the living room also the dust problem must be scrutinized and the hiding places examined. Fireplaces which are not cleaned often are great repositories of dust. As in the bedroom, rugs, rug pads and furniture upholstery materials must be considered. Furniture covering may be any of a number of materials, the most important from the allergist's point of view being wool and mohair. Mohair is made of goat hair and is a common constituent of plushes, velvets and velours. Silk which may be used in covering furniture should not be overlooked as a cause of allergy. In considering silk one should not be misled by such terms as faille, satin, foulard, pongee, taffeta and jersey, which are all primarily silk.

The obvious question at this point is, "How is one to know what the living room furniture is made of?" The author made a visit to a major furniture store recently and examined manufacturers' labels on upholstered furniture and mattresses. Many states have laws requiring the manufacturer to attach a tag to each article of such furniture stating the exact composition of the concealed materials used in its manufacture. Thus a typical label on a couch read, "Concealed Materials Are All New Materials. Contents: Body—Horse Hair, 12½ per cent; Hog Hair, 87½ per cent, together constituting 50 per cent Cotton Felt, 50 per cent Cushions—Duck Feathers 75 per cent, Down 25 per cent." If there are no tags, or if the patient had removed them on purchase, the general composition as outlined here will fit most articles. The importance of the composition of upholstered furniture was recently brought to the attention of a member of our clinic whose patient, sensitive to hog hair, was relieved of symptoms upon buying a new couch.

The fireplace should be scrutinized carefully, not only for dust but for the type of wood burned. A former associate, some years ago, reported a case of severe asthma resulting from wood smoke.[4] Other factors which one looks for in the living room are artificial leather on furniture and heavy coating of furniture polishes and waxes. These all may contain large amounts of linseed oil, which is not an unusual cause of allergy.

BATHROOM

A list of all the drug and toilet articles found in the medicine cabinet should be made because patients too often forget the medicines they take and the cosmetics they use. Hair brushes, shaving brushes and tooth brushes should be considered in the light of possible animal hair allergy. One patient who was sensitive to animal hair had his entire allergy problem solved by mere substitution of an electric razor. Common proprietary medicines and toilet articles may contain an allergic ingredient of which the patient is not aware. Orris root, an important allergen, is no longer a common constituent of face powders since its allergic importance has been pointed out to cosmetic manufacturers. However, it is still used as a carrier or binder for odors in perfumes and therefore may be found in perfumed toilet articles. The so-called allergen-free cosmetics and face powders are mainly free from orris root and therefore may be as allergenic as most of the commercial powders. The importance of hidden ingredients in medicines was brought to the attention of an associate very strikingly when a patient, exquisitely sensitive to milk, continued to have asthma

in spite of a rigid milk-free diet. In this case it was discovered after prolonged investigation that the ephedrine and aminophyllin capsules prescribed for symptomatic relief contained lactose.

Powder puffs may contain sheep or lamb wool, though the majority of the inexpensive ones used by most women are made of cotton. Linoleum on bathroom floors is commonly treated with linseed oil, and in some cases an oiled silk shower curtain may be the cause of the trouble.

KITCHEN

A list of all the foods in the kitchen cupboards and in the refrigerator should be made, mainly because the patient forgets what he eats. Patent prepared and packaged foods must be suspected primarily because of the hidden allergens they contain. Although manufacturers' labels required by food and drug laws are adequate, patients are not label-conscious and actually do not know what they eat. A discussion of the hidden constituents in packaged foods could be almost limitless. Several examples, however, are in order and will serve the purpose of emphasizing their importance. Corn, in the experience of the author, is the most ubiquitous allergen found in commercially packaged foods. It is used in almost all syrups, candy bars, ices, sherbets, ice cream, tenderized ham, canned fruits and baking powder. Corn is used in chewing gums, in bourbon and other whiskies, in beer and ale, and in carbonated beverages. Unless there has been a change in formula recently, such well known products as Welch's Grape Juice, Jello, Mull-Soy, Pablum, Linit, Kix, Mazola and Karo contain corn products. Wheat, egg and milk sensitivity are the most common and the detection of these ingredients in commercial food products often is difficult. A visiting lecturer, some years ago, described a patient who was sensitive both to coffee and to wheat. This patient used Postum as a substitute for coffee and continued to have symptoms until it was discovered that Postum contained wheat.

Other common allergens found in kitchens are oilcloth and artificial leather which are treated with linseed oil. Brushes and brooms are made of wheat, rye, barley and rice (straw) and of animal hair, mainly that of hog, horse, goat, sheep, and camel. Laundry starch is made primarily of corn, but may be made of wheat or rice. Candles are usually made of cottonseed oil; twine and rope are made of animal hair, cotton linters, straw and flaxseed.

CLOSETS

Closets have already been mentioned as repositories of dust. In many homes closets serve as catchalls and therefore may contain any number of possible allergens. Fur coats and fur collars on cloth coats should be regarded with suspicion and the fur must be identified. It should be pointed out that rabbit pelts are commonly plucked, sheared and dyed in imitation of more expensive furs such as seal, fox, squirrel, mink, beaver, leopard, and sable. These imitations usually parade under trade names with the suffix "ette" or "ine" added such as Beaverette and Squirreline; or they may be identified by the addition of modifying proper names, becoming Belgian beaver, French leopard, French sable and Australian seal. The author recalls one case in which a lifelong friendship was almost terminated when it was pointed out to a patient in the presence of a friend of hers who wore a French beaver coat, that a sensitivity to rabbit hair caused her symptoms to develop in her friend's company.

Among the articles commonly found in closets which may be related to the patient's allergy are felt hats, commonly made of various animal hairs, and patent leather shoes, which are treated with linseed oil. Clothes moths found in the closet of a patient have been reported as a cause of asthma.[5]

MISCELLANEOUS

The plan outlined to this point should be extended to include other important rooms in the house such as den, sun parlor, nursery, work room and music room. A patient with severe atopic dermatitis was cured when he was forbidden entrance into a workroom where his son made furniture as a hobby. The author remembers a patient with a sunroom filled with plants. The only difficulty was that the patient had an eczematous sensitization to philadendrum. In this connection the author remembers the story a prominent dermatologist enjoys relating about the patient who had an eczematous dermatitis of the hands which was suspected of being caused by a plant in her room, most likely primrose. For more than a year the patient insisted that she had no plants in her home. Finally, after a year of unsuccessful treatment, a new associate in the office asked if she had any plants near her house. "Oh yes," was the glib reply, "I have a primrose plant in a window box just outside my living room which I trim and water every day."

Some miscellaneous allergens do not fit into the plan of room-to-room survey. Among these are paint and plaster walls.[2] Paints and varnishes contain linseed oil or corn oil or both, while plaster often has animal hair incorporated in it. Roofing tar has linseed oil added. Allergy to these is usually to the fresh paint, plaster and varnish rather than to that which has been in place for some time. Painter's asthma is not rare.

Although this is not strictly a part of the physical survey of the environment, mention must be made of the effect of the psyche on allergic symptoms and how a visit to the home may often disclose conflicts which are not apparent during the office examination. During the visit to the home the trained observer may discover the attitude of the patient toward the medical regimen. In the case of a child, one can note the relationship between the child and other members of the family and whether the child is made self-conscious by his running nose, red eyes or wheezing breathing. The author can remember visiting the home of an 11-year-old asthmatic in search of offending allergens. Casually looking at the music

on the piano and noting that there were two sets of almost identical complicated finger exercises, the author was able to ascertain, through questioning, that the patient competed with her elder sister for proficiency in music. Attacks in this case could be directly connected with visits to the music teacher.

SUMMARY

A systematic plan for the survey of the environment surrounding an allergic individual has been outlined and discussed in detail. Though not complete this plan can be made the basis of a questionnaire to submit to the patient, or can be used as a guide by the person making the actual survey.

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Further Experiences With Pontocaine-Dextrose Ephedrine For Spinal Analgesia

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NOWHERE in the realm of anesthesia is so much accomplished by so little as in spinal analgesia. The few milligrams of drug with which profound degrees of analgesia over extensive areas of the body is achieved would be of inconsequential effect if applied elsewhere. The first spinal injection, consisting of 2 cc. of a 3 per cent solution of cocaine (60 mg.), was given for therapeutic purposes by Corning in 1885.[5] Thirteen years later Bier submitted to the injection of 2 cc. of a 1 per cent solution of cocaine into his own spinal canal.

The dosage of drugs in current use varies with the drug used, the length of the operation and the experience of the anesthetist. In 1928, Sise[9] used from 200 to 300 mg. and occasionally as much as 400 mg. of procaine. In 1935 he introduced the pontocaine-glucose mixture,[10] advocating doses ranging from 10 to 14 mg. for perineal surgery to as much as 20 mg. for procedures in the upper abdomen.

For many years it has been recognized that complications in spinal analgesia are almost directly proportional to the size of the dose of the anesthetic agent. It is not surprising, therefore, that although the quantities of the drug required are now relatively small, efforts should be directed toward developing means of reducing the dosage still further.

Vasoconstrictor drugs were added to the spinal anesthetic mixture very early in the history of spinal analgesia in an effort to prolong the action of analgesia and to make possible the use of smaller doses of the agent. Recent techniques have been introduced by Prickett, Gross and Cullen,[7] who report the use of a procaine-epinephrine mixture resulting in a marked increase in the duration of the analgesia. Their work was based on the well known fact that epinephrine by its vasoconstrictor effect prolongs the action of a local anesthetic agent by decreasing its rate of absorption. The objection has been raised that epinephrine might produce damage to the cord and nerve roots through excessive vasoconstriction and resultant ischemia.[1] This consideration led others to substitute ephedrine since its action as a local vasoconstrictor is not so powerful.[2]

The most recent report on the use of ephedrine intrathecally is that of Potter and Whitacre.[6] They review the work of Jianu and Moisescu[3,4] who in 1932 and 1933 added cardiazol-ephedrine to nupercaine and achieved satisfactory analgesia with as little as 2 mg. of the anesthetic agent. They also cite the work of Romberger[8] who increased the duration of analgesia by 40 per cent or more with mixtures of procaine and ephedrine intrathecally. Potter and Whitacre reported a series of 1,114 patients, half of

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