THE VALUE OF PRE-OPERATIVE INVESTIGATIONS IN LOCAL ANAESTHETIC OPHTHALMIC SURGERY

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SUMMARY

This study was performed to assess the value of routine investigations performed on ophthalmic patients undergoing local anaesthetic surgery. Patients attending the pre-operative assessment had investigations ordered as outlined in accordance with the guidelines of the Joint Working Party on Anaesthesia in Ophthalmic Surgery. The results of investigations were sealed in a clearly marked envelope and stapled to a prominent position on the notes. Any envelopes found unopened at the end of surgery were assumed to have been unseen by either the anaesthetist or surgeon. The effects on patient management were noted. Abnormal results were found in 102 of 314 investigations performed in 100 patients. Of the 100 envelopes 95 were unopened at the end of surgery. No patients had their peri-operative management changed because of the investigations performed. An adequate pre-operative assessment with a history and examination is sufficient in most patients undergoing local anaesthetic ophthalmic surgery, avoiding unnecessary investigations.

Cataract surgery is one of the most commonly performed operations in the elderly. Most frequently local anaesthesia is the anaesthetic of choice in ophthalmic patients, especially those who are medically unfit. Pre-operative assessment, including history and examination, is an important part of the management. We determined the usefulness of pre-operative investigations in these patients.

METHOD

From August to December 1995, 100 randomly selected patients undergoing peribulbar local anaesthetic intraocular surgery were followed prospectively through pre-operative assessment to the completion of surgery. After a history and examination patients were investigated according to guidelines issued by the Royal Colleges of Anaesthetists and Ophthalmologists (Table I),[1] although chest radiographs were omitted (local guidelines). All results of investigations performed were looked at by the participating doctor and then sealed in an envelope and stapled to the notes. Each envelope was clearly marked with the name of the patient and attached to a prominent position on the notes according to a similar study performed on pre-operative chest radiographs.[2] If any results were found to be abnormal a letter was sent to the patient's general practitioner. For any envelopes found open after the operation, it was concluded that the results had been seen by either the list anaesthetist or surgeon. The value of the investigations in the peri-operative management of each patient was graded according to the Greenwich grading system.[3] In this system the value of an investigation in the management of a given patient is expressed by a single grade: essential (3), important (2), helpful (1), unnecessary (0) or adverse (−1).

RESULTS

Of the 100 patients 67 were female and 33 male. The age range was 45–97 years with a mean of 75.9 years, only 8 being under 60 years. Eighty-six patients were due to have cataract extractions and 14 a trabecu-

Table I. Recommendations of the Joint Working Party concerning pre-operative investigations

1. *ECG:* For patients over 60 years and those with symptoms or signs of cardiovascular disease, including ischaemic heart disease or hypertension
2. *Chest radiograph:* (not performed in this study) for patients with a history or signs of chronic lung disease or any suggestion of malignancy or pulmonary tuberculosis
3. *Urea, creatinine and electrolytes:* for those patients over 60 years, those with renal disease, and those taking cardiac, renal or steroid drugs
4. *Blood sugar estimations:* for all diabetics and patients on steroids
5. *Haemoglobin:* for all women, men over 60 years, and those with signs of anaemia

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Table II. Significant pre-existing medical disease

Medical disease	No. of patients
Cardiovascular disease	34
Hypertension	36
Cerebrovascular disease	13
Chronic obstructive airways disease	19
Diabetes mellitus (non-insulin-dependent)	9
Significant drugs	38
Other	23

lectomy. Surgery was performed at 40 separate theatre sessions by 12 different surgeons and supervised by 15 different anaesthetists. Each theatre session was a mixed session, having both local and general anaesthetic cases, run by a dedicated anaesthetist to that list.

Following the pre-operative assessment significant pre-existing medical disease was found in 81 of the 100 patients (Table II), only 19 of the patients having a normal general medical history and examination. The most common group of conditions present in the patients was cardiovascular disease, including hypertension. Other conditions included chronic obstructive airways disease, cerebrovascular disease and diabetes mellitus. Significant drugs taken included steroids, cardiovascular and renal drugs as well as anticoagulants. Applying the American Society of Anesthesiologists' physical status classification, 19 patients were grade I, 35 grade II and 46 grade III.[4]

Of the 100 envelopes, 95 had not been opened by the time the patient returned to the ward after surgery. In only 5 of the patients were the envelopes opened and presumably seen by either the list anaesthetist or surgeon. One of the patients, in whom the investigation envelope had been opened, had their operation postponed due to uncontrolled hypertension (all laboratory tests were normal). No other patients had their operations cancelled.

Of the 314 investigations performed (Table III), 102 were abnormal. An abnormal FBC (full blood count) was found in 13 patients, 5 of whom had a haemoglobin level under 10 g/dl. Abnormal blood biochemistry was found in 33 patients. Of the 8 abnormal blood sugar levels one known diabetic patient had a value of 17.9 mmol/l. The most common findings were abnormalities of the ECG (electrocardiogram). These were found in 48 patients, including 17 with minor arrhythmias, 4 with bundle branch block, 20 with ischaemia and 12 with left ventricular hypertrophy. Of the 5 patients with opened envelopes 3 had abnormalities on their ECG, none leading to cancellation.

Table III. Numbers of investigations performed (abnormal results in brackets)

Investigation	Total no. performed (abnormal)	Total no. opened (abnormal)	Total no. unopened (abnormal)
Full blood count	99 (13)	5 (1)	94 (12)
Urea and electrolytes	98 (33)	5 (0)	93 (33)
Random blood sugar	20 (8)	0 (0)	20 (8)
ECG	97 (48)	5 (3)	92 (45)
Total	314 (102)	15 (4)	299 (98)

All 99 patients undergoing local anaesthetic surgery had uneventful peri- and post-operative times. None had any significant complications associated with the local anaesthetic.

DISCUSSION

The aim of the pre-operative assessment is to obtain the relevant medical and social information about the patient, to educate the patient and diminish anxiety, and to obtain informed consent for the operative procedure.[5] Factors considered in investigating patients undergoing surgery include: (1) detecting conditions not found on history and examination that will affect peri-operative management; (2) whether, if the results are not available, the operation will be cancelled; (3) whether the results will predict patients who will be at risk of complications; (4) medicolegal considerations; and (5) providing an opportunity to screen for medical problems.[5] Amongst American ophthalmologists the most commonly cited reasons for performing pre-operative investigations in patients undergoing cataract surgery were that they were required by anaesthetists or necessary for medicolegal reasons.[6]

In this study 81% of the patients had significant pre-existing medical disease, compared with previous studies noting figures of 70.5% and 62.5%.[7,8] The patients in our group were a selected group as they were all undergoing local anaesthetic surgery, and some of them may, at the time of listing, have been deemed unfit for general anaesthesia. Abnormal results were found in 32.5% of the 314 investigations performed. This compares with 24.2% of investigations in a previous study.[7] Despite this relatively high incidence of abnormal results and coexisting medical disease only one patient had their operation postponed (due to uncontrolled hypertension). For ECGs 49.5% were abnormal and this is in line with previous studies indicating that ECG abnormalities are relatively common in the elderly population.[5] Anaemia was found in 13.1% of results, 5 of which would have been significant enough to warrant cancellation of a general anaesthetic. Abnormal blood sugar levels were found in only 8 patients, all known to be diabetic. Abnormal biochemistry results were relatively common (33.7%) but most were predictable, mainly being minor elevations in blood urea.

Of the 100 envelopes 95 were unopened and the results unseen by either the list anaesthetist or surgeon. Only 5 of the results packets were found to be open, the results presumably having been seen. None of the patients had their peri-operative

management altered because of the results. Applying the Greenwich grading system to the investigations performed in this study, in which the peri-operative management of these patients was not altered by any of the investigations, would give a score of zero for the usefulness of the 314 investigations. One could argue that in the 5 patients in whom the results were presumably looked at, a score of 1 (helpful) for each of the 15 investigations performed could be given as they presumably reassured the person looking at them, despite 4 being abnormal. Applying this grading system to patients undergoing local anaesthetic ophthalmic surgery shows investigations to be of little value in the peri-operative management of these patients.

The Report of the Joint Working Party on Anaesthesia in Ophthalmic Surgery makes no distinction between investigating patients undergoing local or general anaesthetic, stating that 'investigations should be carried out irrespective of whether the patient was having a local or a general anaesthetic, in order to avoid the possibility of confusion arising'.[1] If patients undergo an adequate pre-operative assessment it is unlikely that confusion between general and local anaesthetic would occur, but if there was any doubt about the type of anaesthetic to be used the patient could be investigated as for a general anaesthetic.

Peribulbar local anaesthesia is an extremely safe procedure. Rare systemic complications include (mainly with retrobulbar injections) respiratory, cardiac and CNS depression as well as seizures.[9] Most of these complications are unexpected and cannot be predicted from the pre-operative investigations. Although rare, these complications are potentially very serious. Peri-operative cardiac monitoring and pulse oximetry provide early warning of such complications.[10] If required, resuscitation should be performed by a competent person, ideally an anaesthetist as recommended by the Joint Working Party on Anaesthesia in Ophthalmic Surgery.[1]

Most abnormalities found on pre-operative screening are frequently ignored. While ignoring a result can be considered an appropriate judgement, overlooking an abnormal result may suggest medical negligence.[5] With this in mind and given the limited benefit and inconvenience to the patient of such investigations, there is little justification on medico-legal grounds for pre-operative investigations. Another argument for performing investigations in the elderly population that constitutes the average ophthalmic group of patients is that it is an ideal opportunity to screen a group of people with a potentially high incidence of undiagnosed pathology. Against this is the fact that routine investigations in the elderly population yield little on top of a history and examination.[7] Investigations are expensive, inconvenient to the patient and rarely lead to a change in surgical management. Local guidelines on screening these patients could be drawn up, involving general practitioners to seek their views on screening of their patients, in order to produce the most cost-effective approach.

In conclusion, as this study shows, pre-operative investigations performed on ophthalmic patients undergoing local anaesthetic surgery are rarely looked at and do not affect the peri-operative management of these patients. An adequate pre-operative assessment including a history and examination, with blood pressure and urinalysis, is sufficient preparation for patients undergoing local anaesthetic ophthalmic surgery. Should any unexpected findings be revealed, appropriate investigations and follow-up can be arranged. This will prevent inappropriate investigations from being performed, thus saving inconvenience to the patients and cost without detriment to the peri-operative management.

Key words: Ophthalmic surgery, Pre-operative investigation.

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