

INSIGHT

News Letter



Dr Lal PathLabs

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Friends,

At the outset, I thank you for the support and trust bestowed upon Dr Lal Path Labs during the last 56 years of operations. At Dr Lal Path Labs, we continue to strive for quality and endeavor to provide our patients timely, accurate, cost effective and error free results from the widest test menu.

Through this Newsletter, I would like to briefly share our future business plans:

- We have plans to expand our business operations pan India as well as overseas in the interest of patient care**
- We plan to further enhance our service levels to the customers**
- We will continue to add newer tests and widen our test menu.**

As shared in our earlier newsletter that we have recently added Screening Tests for detection of Inborn Errors of Metabolism (IEMs) through Tandem Mass Spectrometer. IEM are a varied group of disorders having an underlying genetic defects. The aim of new born screening is to reveal the underlying potentially crippling metabolic defects at the earliest (even before the symptoms appear) thereby enabling every new born to blossom into a healthy adult. These metabolic disorders, if not timely detected and treated, may lead to crippling disability, irreversible brain damage and even death. As in advanced countries IEM screening should be made mandatory to facilitate genetic counseling and prenatal diagnosis for high risk pregnancies.

Further, I would like to draw your attention on the recently published articles in Times of India (Delhi Edition 21st Nov. and 22nd Nov. 2005 page 2). The articles highlight the need for accreditation of Labs. In Delhi, there are about 2000 labs, among which only 4 Labs are accredited by NABL. When almost 70 % of a doctor's decisions are based on pathological reports, inaccurate reports can make everything go wrong. I am happy to inform you that we are not only accredited by NABL, but by highest accreditation from College of American Pathologists (CAP) with distinction.

I, once again thank you for your continuous support. Let me reassure you on behalf of Dr Lal Path Labs that we will continue to provide error free results thereby enabling you to make a **QUALITY DIAGNOSIS**.

Always at your service, and looking forward to your continued support!

Dr. O.P. Manchanda
COO
Dr Lal PathLabs Pvt. Ltd.

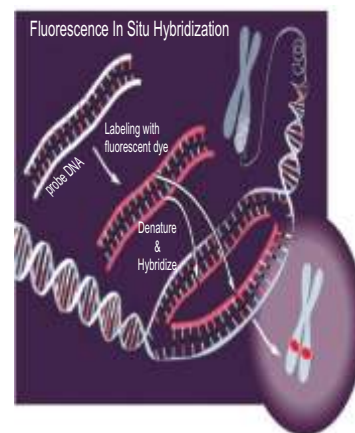
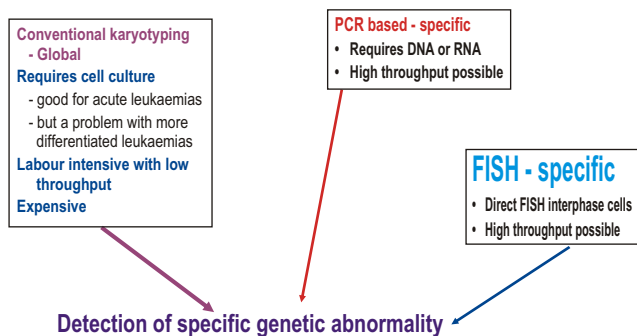


FLUORESCENCE IN SITU HYBRIDIZATION (FISH)

MOLECULAR CYTOGENETICS

Molecular cytogenetic techniques based on FISH have become invaluable tools for the diagnosis and identification of the numerous chromosomal aberrations that are associated with hematological malignancies and solid tumors. FISH can be used to identify chromosomal rearrangements, by detecting specific DNA sequences with fluorescently labeled DNA probes. The use of fluorochromes is safer, requires a shorter reaction time and can give rise to different colors. Dividing cells are not required for this technique since they do not have to be cultured, whereas standard cytogenetics requires actively dividing cells. FISH can be performed on interphase cells and also on archival material. A large number of cells can be studied compared to conventional cytogenetics by which it is possible to karyotype only one or two cells finally. This is important in situations where a karyotypic abnormality may not be present in all the cells in the sample. FISH, PCR based techniques and conventional Cytogenetics need to be considered together as all these methodologies can be used to detect numerical and structural cytogenetic aberrations.

Detection of chromosome aberrations



Using this technique we can look at either detection of a gene or amplification of a gene or translocation of DNA material and thus permits detection of abnormal genes associated with various chromosome anomalies in lymphoma. FISH can be used to determine the origin of marker chromosomes and to confirm numerical & structural aberrations. It can detect regions as small as 0.5 kb on metaphase chromosomes. FISH has particular relevance in the study of micro deletion syndrome because the size of the DNA region that has been deleted is often too small to be detected by conventional banding techniques. Molecular cytogenetic techniques expand our capabilities for making more accurate and refined cytogenetic diagnosis, both for constitutional abnormalities and acquired chromosomal changes in cancer cells.

Application of FISH

- To look for specific translocation in Leukemia subtypes which has important prognostic implications e.g. in chronic myeloid leukemia.
- To endorse the diagnosis of micro deletion syndromes e.g. Williams syndrome
- For specific chromosomal detection in oncology
- To look at the amplification of a gene, this is useful for stratifying patients for chemotherapy

Benefits of FISH technique are:-

- *Rapid results*
- *Is user friendly*
- *Detects specific abnormality*
- *False positivity/negativity very low*
- *Better monitoring of patients during treatment*
- *Better prognostification*
- *Detection of abnormalities in cancer & chromosome anomalies in paraffin embedded lymphoid tissue*
- *This test is recommended where the diagnosis is questionable*
- *Confirming a diagnosis of molar pregnancy while determining sex chromosome makeup and ploidy level*
- *Differentiating between complete and partial hydatidiform moles*

CLINICAL APPLICATIONS OF FISH:-

Prenatal tests:

- Amnio one probe Trisomy 21
- Amnio two probes Trisomy 13,21
- Amnio three probes, Aneuploidy 18, X, Y

Common Tests for Hematological malignancy:

- BCR/ABL OR Philadelphia translocation
- t(15;17) or PML/RARA
- t(8;21) or ETO/AML1
- Inv (16) or CBFB
- Del 13q or D 13S319
- 11q23 OR MLL genes break apart
- 22q deletion or Di George/VCFS

Tests for solid tumors:

- Breast cancer HER-2/NEU ONCOGENE amplification
- Oncology EGFR gene amplification
- Oncology 1 p and 19q co- deletion

Dr. A.K.Kapoor

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BIOCHEMICAL DIAGNOSIS OF PHEOCHROMOCYTOMA

Pheochromocytomas are chromaffin cell tumors typically arising in adrenal glands and characterized by overproduction of catecholamine hormones. Many of the **pheochromocytomas** in adults are benign (90%), 90% occur in adrenal medulla, 90% are unilateral, 10% of cases are familial. **Pheochromocytoma** occurs at any age but is most common in fourth and fifth decade of life. It is slightly more common in women than in men. Hormonally “silent” tumors are more likely to be malignant. Malignant and bilateral tumors occur more frequently in children.

Normally, epinephrine is secreted primarily by adrenal medulla and norepinephrine primarily at sympathetic nerve endings. The epinephrine produced and released by adrenal gland acts primarily at sites distant from its site of release whereas norepinephrine released by nerves acts in the immediate proximity of nerve endings from which the transmitter is released. Epinephrine is produced by tumors usually of adrenal medulla. Norepinephrine is secreted by almost all extra-adrenal tumors and many adrenal tumors. Elevations in one or both of these hormones in bloodstream causes the distinctive but variable signs and symptoms of pheochromocytoma like sustained or chronic hypertension, weight loss, “spells” of sweating, headache, palpitations and anxiety.

Biochemical diagnosis is based on increased blood or urine concentrations of catecholamines (norepinephrine and, to a lesser extent, epinephrine) and their metabolites (normetanephrine and metanephrine). Sometimes, pheochromocytomas may be “silent”, that is they may not produce catecholamines in amount sufficient to produce a positive biochemical test result or the associated typical clinical signs and symptoms. Also, many pheochromocytomas secrete catecholamines episodically; between episodes, plasma concentrations or urinary excretion of catecholamines may be normal. Thus, tests of plasma or urinary excretion of catecholamines may be normal. The metanephrines are constantly produced by actions of **catechol-o-transferases (COMT)** on catecholamines leaking from stores within tumor cells and, therefore, show much more consistent increases above normal in patients with pheochromocytomas than plasma catecholamines. The measurements of plasma normetanephrine and metanephrine reliably exclude the presence of all but the smallest of pheochromocytomas. The high degree of clinical sensitivity of urinary metanephrines and normetanephrines may be due to preferential metabolism of tumor-secreted catecholamines through the extraneuronal pathway catalysed by COMT, whereas normal neuronal reuptake and metabolism leads primarily to **Vanillyl Mandelic Acid (VMA)**.

High Performance Liquid Chromatography (HPLC) is the preferred technique for the measurement of normetanephrines, metanephrines, catecholamines and VMA. The performance of these tests is affected by a number of preanalytical factors stress, upright posture, exercise, hypoglycemia, hypovolemia, cold, hypoxia, hypercapnia, mental states of anxiety and anger, diurnal variation, medication, drug interferences and method of sample collection.

If available, the measurement of plasma free metanephrines and normetanephrines by **HPLC** is the preferred test for diagnosing pheochromocytomas. Impaired renal function may affect the specificity of plasma metanephrines result and should be considered in the interpretation of plasma test results. Urinary VMA has low sensitivity but can be combined with other tests to increase the specificity.

Tests available at LPL by HPLC:

Urinary Metanephrines and Normetanephrines (24 Hour/Random)

Plasma Catecholamines Epinephrine, Norepinephrine and Dopamine

Urinary Catecholamines - Epinephrine, Norepinephrine and Dopamine (24 Hour/Random)

Urinary VMA (24 Hour/Random)

Also available Plasma Catecholamines Clonidine Suppression Test

Dr. Pankaj Sharma

MD, Consultant Biochemist

NEW APPOINTMENTS

*It gives me great pleasure to mention that **Dr. O P Manchanda** joined us as **Chief Operating Officer (COO)**.*

***Dr. Manchanda** is a postgraduate from IIM Ahmedabad, who joins us from Ranbaxy Laboratories Ltd., where he headed International & Innovation, Global consumer healthcare division. He comes on board with more than 15 years of multifunctional experience in sales, marketing & general management in diverse sectors like FMCG, agri-inputs, agri-biotech products and consumer healthcare. On behalf of LPL I welcome **Dr. Manchanda** & wish him best of luck to achieve his goals.*

***Dr. A.K.Kapoor**, Research Scientist is kind enough to take the responsibilities of being an Assistant Editor of INSIGHT w.e.f. third issue onwards.*

Chief Editor

Customer Relationship Management (CRM) in Healthcare

CRM is an integrated approach to identify, acquire and retain customers. Main aim is to manage, coordinate customer interactions across multiple channels, departments, lines of business and helps organizations to maximize value of every customer interaction and drive superior corporate performance. The benefits of CRM are clear by streamlining the processes and providing sales, marketing and service personnel with better, more complete customer information. CRM enables organizations to establish more profitable customer relationships and decrease operating costs. CRM enables companies to deliver seamless and superior customer experiences across every sector and industry, effective CRM is a strategic imperative for corporate growth and survival.

Customer Relationship Management (CRM) is a business strategy designed to optimize revenue and profits by increasing customer satisfaction, attracting new customers, retaining existing customers, and understanding customers better. A successful CRM implementation can improve the business processes involved marketing and servicing functions across all channels that an organization uses to interact with customers e.g. through website, e-mail, phone, fax, in-person. The CRM concept is new to most health care organizations. Due to competition and complexity in the health care market, need has arisen for the health care providers to implement strategic CRM in order to provide excellent quality of services to customers.

Customer Retention should be the primary focus of organizations, as it would contribute largely to their successful operation. Key to customer retention is customer satisfaction.

A highly satisfied customer ;

- *Stays loyal to the organization*
- *Comes to get services when needed*
- *Expresses positive word-of-mouth for services of organization*
- *Pays less attention to competing brands*
- *Is less sensitive to price*
- *Offers new services ideas to the organization through customer feedback*
- *Costs less to serve than new customers do as transactions get routinised.*

Learning about the individuals in your market, using comprehensive data for better planning ,respond to specific market and individual preferences and needs-----That's what health care marketing today is all about.

Rahul Sharma

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New TEST Introductions BNP (B type natriuretic peptide)

Almost 50% patients have non specific symptoms that can be associated with a variety of other disease states. The BNP test is a heart failure blood test which provides an easy quick and accurate laboratory test to rule in and rule out of heart failure. It measures the level of a hormone in blood called B- Type Natriuretic Peptide.

Heart Failure is an important clinical problem with significant morbidity, mortality and socioeconomic impact. Early identification is important to initiate appropriate treatment, which can delay disease progression. **REAL TIME ASSESSMENT OF HEART FAILURE.**

The ventricles- produce extra BNP when they can not pump enough blood to meet body's need. During the heart failure BNP is released into the blood stream as a compensatory response to increased intro-cardiac pressure and volume overload. BNP the active form of proBNP has a half life of 20 minutes. So if BNP level is high , it is the indication of heart failure Higher the levels of BNP worse heart failure is likely to be.

BNP measurement appears to be accurate for diagnosing heart failure in emergency department patients presenting with acute dyspnea. Increased natriuretic peptide plasma concentrations also frequently found in asymptomatic patients with left ventricular dysfunction. Therefore, these peptides have also been suggested as potentially useful early heart failure markers. BNP is also a prognostic marker in patients with acute coronary syndromes. It only takes about 15 minutes after the blood is drawn to get the result. Testing should be done within 4 hours of drawing the blood. BNP assay for point-of-care determination is the diagnostic test of clinical benefit.

Rajesh Jain

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From the Editors Desk

It has been really nice to receive all your encouragement and support through emails for the 2nd news letter. It is great to get comments and views on various issues that have been highlighted .

The diagnostic industry experts feel that it is heading for a big boom. They attribute this to India being the preferred global R and D hub, expansion of the clinical trials market, opening up in the future of the health insurance industry for privatization and getting more Quality conscious.

With around 70 percent of treatment decisions being based on lab results clinicians would require a comprehensive range of tests to arrive at the correct diagnosis. We at Dr Lal Path Labs strive to do this with our capability and experience . In fact Clinicians require a comprehensive range of tests to arrive at the correct diagnosis which we understand and are addressing as we move along our expansion plan.

Molecular Diagnostic tests, Specialized immunological tests, Cancer markers, FISH etc are tests that are being requested more and we are also moving in the direction of trying to offer all the tests that could come under these. In order to serve our patients better we are selecting the right combination of high Quality, Accuracy, Precision and Competitive Pricing as we move along.

We would welcome suggestions in the forms of emails / mails addressing any issue concerning the diagnostic industry/ Dr Lal Path Labs.

Wishing you all a very Happy and Prosperous New Year.

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